AMERICAN ARTISAN and Hardware Record

Vol. 86. No. 22. 620 SOUTH MICHIGAN AVENUE, CHICAGO, DECEMBER 1, 1923. $2.00 Per Year.

Founded 1880 by Daniel Stern

Thoroughly Covers the Hardware, Stove, Sheet Metal, and Warm Air Heating and Ventilating Interests

AMERICAN ARTISAN and Hardware Record

Address all communications and remittances to AMERICAN ARTISAN AND HARDWARE RECORD 620 South Michigan Avenue CHICAGO, ILLINOIS

PUBLISHED EVERY SATURDAY BY THE ESTATE OF DANIEL STERN

Eastern Representatives: C. C. Blodgett and W. C. White, 1478 Broadway, New York City

Yearly Subscription Price: United States $2.00: Canada $3.00: Foreign $4.00

Entered as Second-Class Matter June 25, 1885 at the Post Office at Chicago, Illinois, under Act of March 3rd, 187?

Vol. 86. No. 22. CHICAGO, DECEMBER 1, 1923. $2.00 Per Year.

THAT TEN DOLLAR PROFIT FREQUENTLY BECOMES A TEN DOLLAR LOSS.

One of our subscribers, in a letter published on page 15 of this week's issue, calls attention to a point which, he says, we missed in our editorial on page 13 of our November 24th issue, and we are inclined to agree with him.

Our subscriber states:

"You refer to the 'Lizzie' and the Cadillac, and your comparison is all right in every respect except that when Mr. Ford sells one of his perambulators he makes a profit, and when a Ford dealer sells one the dealer makes a profit also, but while the manufacturer of a furnace may make, and no doubt does make a profit, in most cases the fellow who specializes on low priced installations runs so close to the ragged edge that the least bit of service after the sale to make it stick not only takes away the five or ten dollar 'profit' but actually makes the sale a loss producer."

He may have to make two or three trips to a house, each trip taking an hour or more, "to fix things," and a five dollar bill will not go very far in paying for a man's time on those jobs.

For that reason, there are many furnace installers who "do a good business," so far as number of furnaces sold is concerned, but whose net profit on that business is almost nil.

And the only way to remedy this is to provide enough leeway in the price you ask to take care of that "after sale service."

It is possible, of course, that there may not be any such "after sale service," and in that case the installer has made a little extra profit, because he has done a good job all through. There will be enough of the other kind to even things up.

As a safe proposition, our suggestion is that on all estimates for furnace installations five per cent of the gross price be added to care for just such contingencies.

Another correspondent, whose letter also appears on page 15, points out that there will always be many installers who will specialize on low price work, and that these will always be a thorn in the side of those who do really high class work.

Not at all—for two reasons:

First—a low price does not necessarily mean a poor job. We know of many inexpensive furnaces that give good satisfaction because they were properly installed.

Secondly—if all but one man in a town do poor work on furnace installation, that one man is more than likely to have all that he can do to care for the business he can secure from people who are willing to pay for "Performance" rather than for a "Furnace."

And to this man it will make no difference what any of the others—or all of them—do. He has set "Quality" up as his guiding star, and instead of being bothered, his business chances are actually enhanced, because his work stands out, as any high grade work always does, in comparison with common-place or poor installations.

Random Notes and Sketches.

By Sidney Arnold

Harry Van Bayse, of the American Furnace Company, is quite a philosopher in his quiet way, and he can stump you very easily if you try to get him in a corner.

Witness the following repartee:

"Which is the most important in industry — Capital, Labor or Brains?"

Harry's reply: "Which is the most important leg of a three-legged stool?"

* * *

General Frank T. Hines, director of the United States Veterans' Bureau, has issued a call to all posts of the American Legion to assist him in finding suitable employment for some 10,000 rehabilitated ex-service men who will be graduated from the bureau's vocational training schools within the next three months. That is an appeal which must not be in vain. Not only Legionnaires, but all employers of skilled labor throughout the country ought to heed it.

The appeal is not one of charity. These former sick or crippled soldiers and sailors have been educated by the government at considerable expense to enable them to overcome the handicaps suffered through the war and to become self-supporting and productive citizens. The training was a duty owed to them by the government in whose service they had lost their customary earning power. Now that the government has almost completed the payment of its debt, the public must do the rest.

The men involved are highly skilled in numerous fields of work. They can and will earn their own way and return a profit to their employers if given an opportunity. It is up to the employers of labor to find such opportunities for them. All that is necessary is for every employer in need of help to write a note to the Veterans' Bureau at Washington or to his local bureau, stating his requirements, and they will be filled.

* * *

J. B. Allen, Muncie, Indiana, one of the old-time subscribers of AMERICAN ARTISAN, called on me the other day and we had a pleasant visit.

Among other things, he told me about the sheet metal boats that he has been making, and one of which

Sheet Metal Boat Made by J. B. Allen, Muncie, Indiana.

is shown in the accompanying illustration. The young man in the stern of the boat is his son.

Mr. Allen had two pictures. In the other a young lady was shown—that is, her back, and I could not see who her companion in the boat was, and he did not explain why the young lady was averse to having her picture in the paper, for, of course, that photo would have been selected for reproduction if we could have shown her face.

* * *

W. C. Howard, whose home is in Waupun, Wisconsin, was one of a committee that guided a group of visitors through the state prison which is located there.

Among the visitors was a woman who stopped every little while to speak to the prisoners, but after the following incident she was not quite so anxious to converse with them:

"And were you really guilty of the charge brought against you?" asked the woman.

"Well, lidy," replied the hard case, "seein' as they copped me in the 'all of the 'ouse with a sack of silver in me and seein' as all the silver was missin' out of the dinin' room, and likewise seein' that it took three policemen to get me to the station, not countin' the one I laid out with me jimmy—well, you'd 'ardly call me a hinjured hinnercent, would yer?"

* * *

George Harms was in Aurora with me the other night gracing the local Sheet Metal Contractor's Association with his presence and in the interval between the salad and the pie tried to catch me with this o'd conundrum:

"What's the difference between the jingle of the American dollar and the Chinese yen?"

I came back right at him: "One is the chink of the coin and the other is the coin of the Chink."

* * *

Joseph C. Gardner of Indianapolis, Ind., as you all know, is one of the Vice-Presidents of the National Sheet Metal Contractors' Association. Mr. Gardner, while on his way through Chicago recently, stopped in to see me and we had a very enjoyable chat together.

He certainly looked as though he were in the best of health and that prohibition was not causing him any worries.

* * *

"On the other hand," said Dick Moncrief, "it is nothing more than proper to try to get all the light you can on any subject in which you may be interested. As for instance:

"The stingy farmer was scoring the hired man for carrying a lighted lantern to call on his best girl.

" 'The idea,' he exclaimed. 'When I was courtin' I never carried no lantern; I went in the dark.'

" 'Yes, said the hired man, sadly, 'and look what you got.' "

Furnace Installers Agree That Aggressive Educational Work Must Be Started.

Truth Plainly Spoken and Remedies Pointed Out Are Sure to Improve Conditions.

EVIDENTLY our editorial on page 13 and the article on pages 15 and 16 of our November 24th issue has struck a responsive chord, judging from the following letters:

Keep Up the Good Work.

To AMERICAN ARTISAN:

I wish to compliment you on the straight-from-the-shoulder articles in your November 24th issue, regarding the Warm Air Furnace Industry.

If you will follow this up with additional articles of the same general nature, I am sure you will be doing our industry great good.

Yours truly,
OHIO MANUFACTURER.
——, Ohio, November 26, 1923.

Hits the Bull's-Eye.

To AMERICAN ARTISAN:

You sure hit the bull's-eye with your article in last week's issue of AMERICAN ARTISAN, especially the one on page 15.

Warm air furnaces have been sold, and are being sold, on altogether too cheap a basis, considering the service which the installers render—I am talking about those who mix conscience with brains and experience—and the more of that sort of talk from disinterested people like yourselves we can get the better for all of us.

I have been in this business for over twenty years, and it seems to me that never has there been a time when such exhortation is so badly needed. Men are selling and installing furnaces who have no idea of what "cost" means, with the result that everybody suffers—the public as well as installers.

You are doing more for the industry right now than anybody else that I know of—keep on!

Respectfully,
INDIANA INSTALLER.
——, Indiana, November 26, 1923.

He Says We Did Not Tell It All.

To AMERICAN ARTISAN:

That was a fine editorial in your November 24th issue, and I agree with almost all you said, but you did not go far enough.

You refer to the Lizzies and the Cadillacs, and your comparison is all right in every respect, except that when Mr. Ford sells one of his perambulators, he makes a profit, and when a Ford dealer sells one, the dealer makes a profit also; but while the manufacturer of a furnace may make, and no doubt does make a profit, in most cases the fellow who specializes on low-priced installation runs so close to the ragged edge that the least bit of service after the sale to make it stick not only takes away the five or ten dollar "profit," but actually makes the sale a "loss" producer.

What we need is a lot of education like that passed on to those who do not know enough to sell furnaces on a "performance" basis instead of on the basis of so much iron and sheet metal, as you put it.

More power to you for the good work you are doing for us furnace men.

Yours truly,
MISSOURI INSTALLER.
——, Missouri, November 27, 1923.

The Laborer Is Worthy of His Hire.

To AMERICAN ARTISAN:

If I had read that article of yours about the dirty shops and poor business methods of some furnace men four years ago, I might have stopped my subscription, because it would have hit me squarely in the face, and maybe you will lose a few subscribers now, because they don't like to have the truth told to them in a straight, honest manner.

But I learned something from a salesman just about that time, and today my shop is swept every night after hours, and my office looks like a real office, so that I don't have to apologize to any well-dressed man or woman who comes in to talk business.

There was a time when I wore a work shirt and overalls every day and never thought that it might interfere with my selling or with my ability to get a profitable price, but while I still do some work in the shop, I don't go around that way when I am selling furnaces, and I find that it is much easier to sell and get a good price when I can go to the front door of the house instead of to the kitchen door.

A "good front" counts a lot when you are doing business with people who wear white collars.

And one other thing—I don't try to get all the jobs in my town, even though I may bid on most of them, but whenever I get one there is always something substantial left after all bills and expenses have been paid.

You are helping the industry a great deal with articles such as I read frequently in AMERICAN ARTISAN.

Yours truly,
PENNSYLVANIA FURNACE MAN.
——, Pennsylvania, November 27, 1923.

Time-Saver Wall Calendar, Poster and Window Sign Produced By Waterman Waterbury Company.

As a generous proof of their ability and whole-hearted willingness to anticipate the demands and necessities of their customers, and to boost the Warm Air Heating Industry, the Waterman Waterbury Company, Minneapolis, Minnesota, have constructed a 1924 wall calendar which, as they say, is indeed more than a systematic arrangement of days and months.

This time reckoner is 20 x 27 inches over all, with large block letters, which can be seen from any ordinary distance in an office and store. However, instead of giving the six or eight inches of space at the upper end of the sheet over to beautiful but meaningless sketches of the great outdoors, which only

create a longing for vacation time, this valuable space has been utilized to far better advantage.

The illustration for the month of January is that of a country school room, showing the heater properly installed, while the air currents are indicated in passage by white arrows. The illustration for the month of February is that of a dwelling house shown in cross section, the basement, main and upper floor rooms being shown. In this illustration the passage of warm and cold air currents through each room is indicated by red arrows.

The third illustration, the toilet connections for a city school, a city bathroom and a country school toilet arrangement—all in cross-section.

In the upper right corner of the calendar itself a small insert of the coming month is placed, and in the left-hand corner the insert gives the preceding month, so that three months are always visible on any one month.

In addition to the calendar the company has produced a large warm air wall sign for dealer use in attractive colors and large easily readable type.

Decalcomania window signs, carrying, in gold and red letters, the words "The Waterbury Seamless, Pipeless Furnace, Clean, Healthful, Economical Heat," together with a large illustration of a warm air furnace fully assembled and in natural colors.

For further information and specimens of unusual and unique productions write the Waterman Waterbury Company.

Dr. Evans Tells About Experiments Which Had to Do with Air Motion and Humidity.

States That in Temperatures Below 95 Degrees Fahrenheit Helps Materially in Matter of Comfort.

IN THE November twelfth issue of the *Chicago Tribune* there appeared the following article, written by Dr. W. A. Evans, former Commissioner of Health for Chicago, which contains some useful information for the furnace installer and ventilating engineer:

What Warm Air Does to Body

Conditions of warm air have a powerful influence on the human body, an influence which records itself over a range from heat stroke at one end to grouching at the other.

The three qualities of air which are major factors in producing these effects are: temperature, humidity, and drafts. Sayers and Harrington conducted very extensive experiments from which they obtained the following results:

A. Men at rest in air saturated with moisture and at a temperature of 91½, for one hour, with no air movement.

Effects on men:

Increase in body temperature.

Moderate increase in pulse rate.

Profuse sweating.

Dizziness and weakness as after effects.

With Air Movement

Slight or no increase in body temperature.

Slight increase in pulse rate.

Slight perspiration.

No after effects.

No ill effects at any time, but the noise of the fan was complained of.

The conclusion is that when people live in air that is saturated with moisture and is 91½ degrees hot, they will be comfortable if the fans are working or the breezes are blowing.

B. Same conditions, except the temperature of the air was 95.

Still Air

Increase in temperature of the body.

Marked increase in pulse rate.

Very profuse sweating, clothing being saturated with sweat.

Sweat in shoes.

Dizziness on movement.

Rapid respiration.

Chilling sensation.

Draft of 250 to 600 Feet Per Minute

Slight or no rise in body temperature.

Slight or no rise in pulse rate.

Profuse sweating.

No untoward symptoms.

Conclusion: People can stand saturated air at 95 if they stay in a draft.

C. Same conditions, except air at 98½.

At this temperature not even moving air made conditions tolerable. In moving air, there was an increase in body temperature, an increase in pulse rate (in one case up to 183), very profuse sweating, dizziness. No work could be done at this temperature.

D. Same conditions, except air at 100.

Still Air

Body temperature rose to 102.3.

Pulse rate rose to 152 to 175.

Profuse sweating.

Early appearance of dizziness and weakness.

When the air was set in motion (200 to 800 feet per minute) the people under experiment said they were made more uncomfortable. None of them was able to spend one hour in the room where the hot, wet air was in motion.

The general conclusion is that it does good to use fans when the air is very wet so long as the temperature keeps below 95. At temperature between 95 and 99, fanning does very little good, if any. At temperature 100 and over breezes do more harm than good. Working conditions are moderately good where the temperature is under 95, provided the air is not saturated with moisture and provided there is a breeze.

If everyone realized that the man who through carelessness permits a preventable fire, picks the pockets of the entire community, either through the fire insurance which he collects for his losses, or through the use of the fire apparatus which is maintained by his fellow citizens, his responsibility would be immediately recognized.

Millis Tells How Energy Called Heat Gets to Us From the Sun and How "Canned".

He Also Explains What Relation This Study of Heat's Source and Heat's Transferability Bear to the Furnaceman's Problem.

IN THIS article, as he promised us some time ago, W. L. Millis has given a working idea of how the energy we call heat gets to us from the sun; how it is stored in coal, wood and other combustibles, and finally, what part the furnace man plays in its economical delivery to the place where we can use it for our own convenience.

Changing Radiant Heat to Convected Heat

A man wishing to be complimentary, introduced a speaker as the man who knows the unknowable, who can do the undoable, and who can unscrew the unscrutable. I think he must have been trying to talk about what heat is.

At our last meeting we promised to try to get an idea of how heat reaches us from the sun. But before we try that, I want to show you what men thought they knew about heat a few years ago.

They assumed that heat was a sort of substance, but without weight, and that this substance filled the spaces between the particles of a body.

They also assumed that the more a thing contained of this sort of "Spook" fluid the hotter it would be. But Professor Tyndall has set us straight by telling us that "Heat is a mode of motion." We examined that phrase at our last meeting and agreed with him, because the rate of molecular bombardment and the temperature of a thing are related. Tyndall did not tell us the origin of the bombardment, but I don't blame him for that. There is heat in the bowels of the earth, but the heat the furnace man uses came from the sun. So it will pay us to study that.

If we think of heat originating at the sun and also think of it as a "mode of motion," we get all "balled" up wondering how a "mode of motion" can come from the sun to the earth without something to act on. That is to say, how can a motion reach the earth without something to move?

In recent years you have heard much about the "Ether" and ether waves in wireless telegraphy and in radio work. Someone may ask how we know there is such a thing as ether when we can't perceive it by any of our senses. The answer is, that we do not *know* it; but it is mentally necessary to fill all interstellar space with something that

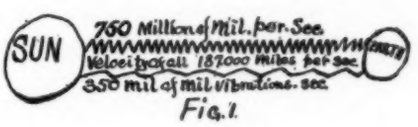
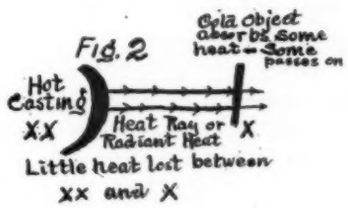


Fig. 1



can be acted upon, so they just assume it.

So far as I know, no scientist claims to know that it exists, but no investigator of such things as electricity and light or heat has accomplished anything on any other assumption. So when some wise man jumps up and shouts, "There is no Ether," don't get excited, because no competent person, or set of persons, ever asserted positively that there is. It is exactly the same way with the so-called "Law of Gravitation." You see the effects of it and we have learned to accomplish things by conforming to that law.

Conception of Ray of Light

And "that is that." Now these followers of the Ether theory have worked out a nice conception of how heat and light come from the sun to our planet through a "mode of motion." A ray of light, for example, is a bundle of waves traveling at the same rate of speed, but the waves have various wave lengths, or vibrations. Perhaps Figure 1 will help us to get the idea.

The ray or stream of light travels at a rate of (I think) 187,000 miles per second, but the individual waves that compose the stream vibrate at widely different rates. Investigators say the red waves vibrate about 350 millions of million times per second, while the violet rays vibrate more than twice as fast. The many colors of the rainbow range between these two colors and are all that affect the human eye. But scientific photographers know that there are faster waves than the violet waves, while other men know that there are slower waves than the red waves, and that they are characterized by more warmth than the red waves.

Sometimes in a speculative mood I wonder if some of the lower animals, insects or reptiles have eyes with a wider color range than ours. We recognize seven colors. How many do you suppose there really are?

EDITOR'S NOTE—See dictionary or Encyclopædia for discussion on "Color Spectrum."

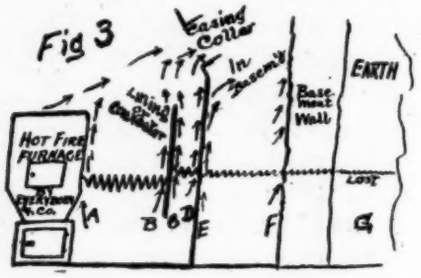
How Our Heat Is Derived from the Sun

Perhaps a common furnace man has no business to think about such things, but it is a part of his job to get the heat that goes with these marvelous rays to go to places where they are wanted. So let us imagine these rays leaving the sun, vibrating along their way to our earth, and let us think of them as heat waves as well as light waves. And also (without argument) let us think of them as giving no evidence of light or heat on the way to us. That is to say, they come through intense cold and intense darkness without any of the characteristics of either light or heat.

We have almost no hint of how it is done, but in some way or other this wave of energy, of light and heat has the power to awaken something already in our earth and causes seeds to grow and to draw

from earth, water and air certain things, one of which is carbon already present as carbon dioxide in our air.

When we had up the matter of coal some weeks ago we found that carbon under certain conditions will



Wavy Line Is Radiant Heat. Arrows at A, B, C, D Show Heat "Convected" as Warmed Air Available at Canopy Collar. Arrows at E and F Show Convected Heat Available Only in Basement. G Shows Unconverted Radiant Heat, but Lost—Lost Forever.

unite with oxygen and in the process will give off heat. So we feel justified in saying that heat comes from the sun and is condensed in plant life and later "canned" in the form of coal and oil. When we burn the coal we reverse the "canning" process. Those heat waves begin to travel. Now let us go back a little ways in that wave business. It is the most important thing a furnace man can know. I said a moment ago that a wave coming from the sun lost no heat on the way. In the same way a heat ray travels from a hot casting *without losing heat* on the way. Figure 2 illustrates this idea.

Radiant Heat

This form of heat is called *radiant heat.* You have stood near a hot stove and felt your legs burning on the side next to stove, but cold on the other side. The radiant heat wave strikes a surface and it changes to heat. That is to say, the vibration of the ether wave sets up some sort of motion in the object it strikes and the energy of the wave reappears in the object as heat or, we might say, heat energy.

So we find radiant heat warming things at a distance from the source of heat, provided the heat wave can travel in straight lines. We also know that these heat waves can be reflected, refracted and absorbed exactly as light waves are, and that some objects reflect more than others, while some objects allow either light or heat to pass through with little opposition, while some absorb heat more than others.

Try taking a piece of bright tin in one hand and a piece of black sheet iron in the other and hold them near a hot stove. You will drop the black piece first because it absorbs the most heat, while the tin reflected much of the heat away from it.

It is manifest that so far as a furnace is concerned, some method must be found to carry the heat away beside radiant heat. So now we come to another of nature's secrets. We don't know how it is done, but somehow or other heat is imparted from one thing to another. The one thing we are interested in is how heat is imparted to air, because that is the way nearly all the effective heat of a warm air furnace is applied.

When a little particle of air comes in contact with a hot thing it absorbs a little heat. It expands and thereby becomes lighter, and therefore has a tendency to rise. But once the particle of air has acquired some heat, it is niggard about giving it up to any of its neighbor air particles. But its tendency to rise causes it to move and another particle gets next to the hot surfaces, absorbs a little heat, and hustles along upward. Very little heat is absorbed directly from a hot casting except by the particles of air that touch it and, using the old phrase, wipe the heat off the casting.

Convected Heat

This is called "convected heat." But we must remember that there is also radiant heat going out from the casting to the casing of the furnace.

The intelligent furnace setter with the same apparatus can change more of this radiant heat to convected heat than the uninformed installer.

Figure 3 shows air rising at A, wiping heat from the furnace. Manifestly, the easier the air can flow around the furnace, the better "wipe" it can make. That is your job. It challenges all your skill.

But a large part of the heat is leaving the casting in the form of radiant heat. It gives up little heat to the air between the casting and the casing, but when it strikes the casing some action is set up and makes the casing hot. The casing is shown at D and E. The casing is being wiped by air both inside and outside.

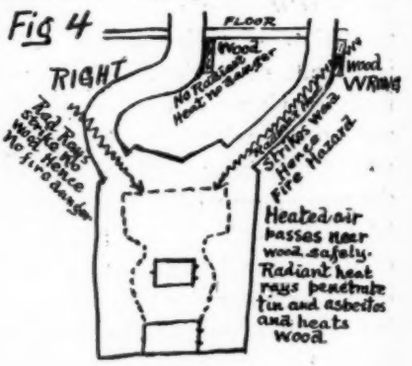
Of course, the outside heat is left in the basement, while the inside goes to the canopy. Now let us look at the casing lining, B. C.

The sketch shows a space between the lining and the casing so air can pass upwards. The lining becomes a true "convector." Its only office is to absorb heat to be wiped off by air rising on both sides of it.

It cannot absorb all of the heat waves, so some go past it to the casing. The air rising around the casing absorbs some heat. Notice how that word "absorbs" smacks of the old thought that heat is a thing. But we don't care about the word if we can know what is really going on.

Air Must Wipe Heat Surfaces

What I want you to get fully in your mind is that very little heat is given up to the air in the space inside of casing, except where the air gets a chance to wipe heated surfaces. The space between the furnace and the casing is a little bit similar to the space between the



earth and the sun in which no heat is lost. Let us hurry along after that radiant heat that passed clear through the casing. It hits the basement wall at F and wipes some heat off into the basement. The balance of the heat wave goes on into the

earth outside of wall, and so far as the furnace man is concerned is forever lost.

Did I overstate it when I said this subject of, what heat is, is the most important thing a furnace installer can know?

Mr. White: "Will you tell us about that hot casing we could not account for out on Baltimore Avenue?"

Answer by Mr. White: "The furnace man had a new helper and unknown to us, he discarded part of the separators used between the lining and the casing and bolted the lining at top tight to the lining. No air could pass between lining and casing. We opened up space and our troubles were over."

"Thank you, Mr. White."

Many people ask us what it will cost to cover a casing with asbestos. We are immediately suspicious that some condition needs to be changed, and suggest that we be allowed to ascertain if there is enough air being admitted to the furnace to successfully wipe all the hot places in it.

But there are other ways this radiant heat stuff require a furnace man's attention. Here is our old Figure 8 sketch (AMERICAN ARTISAN AND HARDWARE RECORD, April 7, 1923, page 20). Notice that under the wood is shown a piece of tin or galvanized iron between the wood and the smoke pipe, and that there is an air space between the wood and the metal. Tin will reflect more heat than galvanized and galvanized more than black iron. So a post near a smoke pipe should have a piece of either galvanized iron or of tin fastened between pipe and wood, *with an air space* between wood and metal so the air can rise between them.

One more application of this radiant heat and then you can go home. When you run hot air pipes off from a canopy, always be sure no rays of heat can go from top (or hot) furnace castings in unbroken lines to woodwork. We have learned that *radiant* heat will pass through most materials. Elbows and goosenecks should be resorted to in order to get the rays to heat something that passing air can cool.

This Figure 4 may help us.

The same thing applies to a shoe or boot for inlet of air at bottom of casing. That is the reason a shoe should not be higher than the top of the ash pit. Radiant heat from a pot "shining" back into a high shoe will warm metal beyond. If there is a wooden connection there is danger of fire.

If the metal in duct is heated, the air passing wipes a portion off of the dust and then the tendency of the air (being made lighter) is to about face and go back upstairs. Can you blame it?

I know this has been a tedious evening, but if you get this "Mode of Motion" notion at your command you need have no fear of installing a poor job.

Once more let me say, it is the most important thing a furnace man can know (and apply). Good-night.

Why Does This Pipe Not Carry Any Heat?

Again we come to our friends with a request for help for one of your friends in Missouri. His letter follows:

To AMERICAN ARTISAN:

I am enclosing a rough sketch showing a pipe that I ran from a pipeless furnace to a small bath room—6′x8′x9′ ceiling. This pipe failed to carry heat.

Can you tell me why?

I was told that the air passing around this pipe where it goes through the double casing would not interfere with the flow of warm air in the pipe.

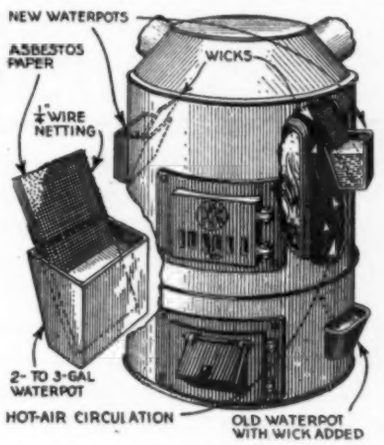
Is this correct?

C. B. ROSE.

———,Missouri, November 24, 1923.

Wack, of Toledo, Describes Means for Greater Humidification in Warm Air System.

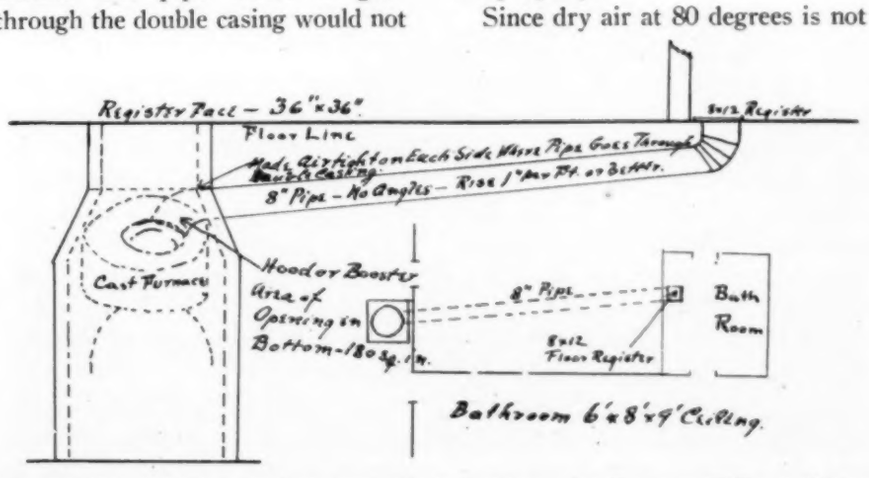
John H. Wack, Toledo, Ohio, in the following article, published by *Popular Science Monthly,* describes a means which he has tried out for obtaining greater humidification of air in a warm air heating system:



Two Water Pans Are Added High Up in the Furnace Jacket, Provided With Asbestos Wicks.

If your furnace is of the old-fashioned hot-air type, it probably has only one small waterpot and that in the bottom of the furnace. This is too low to get very warm and therefore does not supply a sufficient amount of moisture to humidify the air properly.

Since dry air at 80 degrees is not



The Eight Inch Pipe Leading from Pipeless Warm Air Furnace Fails to Carry Heat. Why?

as healthy and does not feel as warm as air at 70 degrees, or lower, with the proper amount of moisture, it is important to add additional humidifiers. This can be done without great expense if the furnace man, while overhauling the furnace for the winter, places another waterpot or two close to the top of the furnace jacket. Have him also make asbestos wicks for each waterpot, as shown. If you can do the work yourself, so much the better.

The working of these humidifiers is obvious. The cold air is heated and in passing up is deflected around the wicks, absorbing from them a considerable amount of moisture. Care will have to be taken to fill the waterpots at least once a day, as in actual operation it was found that these wicks suck up and throw off at least 2 or 3 gallons of water a day.

Warm Air Furnace Installation Code Is Being Compiled by Minneapolis Local

This Portion of New Building Code Is Patterned After Standard Code, with Local Application.

THE following article, prepared by Le Roy D. Godfrey, tells about the work which is being done by a few warm air furnace installers in Minneapolis, from which all installers in that section will benefit:

It was a big task that a few enterprising furnace dealers in Minneapolis undertook when they started the formulation of a furnace code particularly adapted to Minneapolis. These furnace dealers, while coöperating with each other, represented at the same time various fields of activity in the furnace world. Through their sincere desire to accomplish something for the benefit of the warm air heating industry they soon overcame their differences and worked out the proposed code for the city of Minneapolis, which, no doubt, is a model complete as to detail and comprehensive as well.

Of course, this committee of furnace dealers had a point of beginning which was in itself far advanced into the field of better furnace installation. The "Standard Code," as it is known, formed the basis of deliberations. The Standard Code first came into existence through the efforts of the Western Warm Air Furnace and Supply Association, then shortly adopted by the National Warm Air Heating and Ventilating Association, and next, the National Sheet Metal Contractors' Association, your own organization. This action was quickly followed by approval on the part of the American Society of Heating and Ventilating Engineers and the Midland Club of Furnace Manufacturers. Of course, the experiences of all these organizations were felt in the final formation of the Standard Code. The results of the series of experiments that are now being carried on in warm air heating by the University of Illinois have been open to all of the organizations as well as our Minneapolis committee in evolving the present proposed code for Minneapolis.

Will Form Part of Minneapolis Building Code.

The proposed code as formulated is now placed in the hands of the committee of architects and engineers who are formulating the complete Building Code for Minneapolis to be presented to the city council some time in the near future.

It is hard to forecast whether the Building Code Committee of Minneapolis will suggest any changes in the code as formulated by our committee of furnace dealers, but, as by expert opinion it is pronounced so nearly perfect, it is doubtful if any changes will be made. The purpose of this code is primarily to raise the standard of the warm air heating industry. Too much antipathy on the part of the general public has been aroused against *warm air heating* in this climate, due primarily to unscientific furnace installation, but the proposed code will eliminate any chance for improper installation, provided it is strictly enforced.

Transition Fittings Covered.

Among its many and complete provisions, the proposed code will cover the proper method of estimating the size of pipes and registers and the size of stacks to second floor rooms. The proper size of furnaces to be used will also be indicated. The size of cold air returns will be carefully regulated. In fact, it lays out a standard of transition fittings for warm air runs and cold air returns. The proper method of installation in all phases of the work is carefully covered.

The rules provided in the code will preclude the possibility of improper arrangement of pipes and stacks, and will so provide regulations for each detail of installation which, when properly followed, will insure maximum results.

Means Bigger Business.

This proposed new code is going to open up a new field for you and a much broader one than you have had before. You can rest assured that the best brains of the warm air heating industry of the United States have been hard at work the last few years to develop a standard of furnace installation that will bring warm air heating as nearly perfect as possible. It is time to give up "rule of thumb methods" and bring your heating thoroughly up to date.

The Minneapolis committee is not only willing but anxious to be of assistance to furnace dealers outside of Minneapolis if contemplating the formulation of a furnace code for adoption in their own city. On application to Le Roy D. Godfrey, 2429 University Avenue, West, St. Paul, a copy of the proposed code for Minneapolis will be sent to such interested dealers. And furthermore, members of the warm air heating industry of Minneapolis will be glad to send one of their number to address and confer with groups of dealers in other cities. Just a word will bring action.

Of all crafts, to be an honest man is the master craft.

Here Is a Fine Example of Good Work in Making and Hanging Zinc Cornices.

William F. Zeller Company, Baltimore Sheet Metal Contractor, Had a Big Job and Did It Well.

IN the accompanying illustrations are shown views of the new School Number 8 in Baltimore, Maryland, which was built during the summer of 1923, Buckler & Fenhagen being the architects.

The entire cornice on both sides of the building is formed of "Horse Head" Rolled Zinc and the

Figure 1.—"Close-up" of Zinc Cornice Showing How Exposed Parts of Rafters Are Sheathed.

eaves trough, down spouting, and leader heads are of the *same* metal.

The zinc was formed and put on by the William F. Zeller Company, Incorporated, of Baltimore. The cornice is of Number 11 gauge zinc, .024 inch thick, cornice crimped, and is put on in strips 8 feet long and nailed with zinc clad nails.

The "close-up" in Figure 1 shows how the exposed portions of the rafters are sheathed and the space between the rafters covered with zinc panels.

This view does not show the lower portion of the cornice which extends down the wall of the building.

On account of the width of metal required, the cornice was formed up in four sections, the section joints being made at some break in the building line so that the joints would not be prominent. At the eaves the metal is brought underneath the tile roof. The contraction and expansion of the metal will be taken care of by the crimps, which are a special feature of Horse Head zinc, and it is only because of these crimps that zinc could be used, as it is almost an impossibility to form up such an intricate cornice and take care of expansion and contraction by expansion joints.

The architect, the city engineer, and the sheet metal contractor were all satisfied that the metal would give excellent service.

The eaves troughs on either side of the building are of "Horse Head" cornice crimped zinc, 8-inch half round single bead with slip joints. The gutter hangers are of the shank and circle type, tinned, the shanks being attached to the under side of the sheathing boards. These hangers are spaced at a distance of 18 inches because of the unusually large eaves trough. There are four outlets on either side, consisting of a gooseneck made of "Horse Head" zinc, passing through false leader heads and emptying into drains on the top floor.

This is the largest zinc cornice job that we are familiar with, although there is another school in Troy, Pennsylvania, the cornice of which also is being covered with Horse Head zinc.

Deepest and Largest Underground Mine Will Be Opened Near Ironwood, Michigan.

The deepest and probably the largest underground mine in the world is being opened up in the Gogebic iron range, between Bessemer and Ironwood, Michigan. The shaft, when completed, will be 4,000 feet in depth—1,000 deeper than any other iron mine in this country. Nearly two and one-half years will be required, working every day in the year, to complete the shaft alone. It will be known as the Geneva mine.

Life will treat you a good deal better for being able to keep smiling under difficulties.

Figure 2.—Front View of New Baltimore Public School, the Cornices of Which Are Made of Horse Head Zinc.

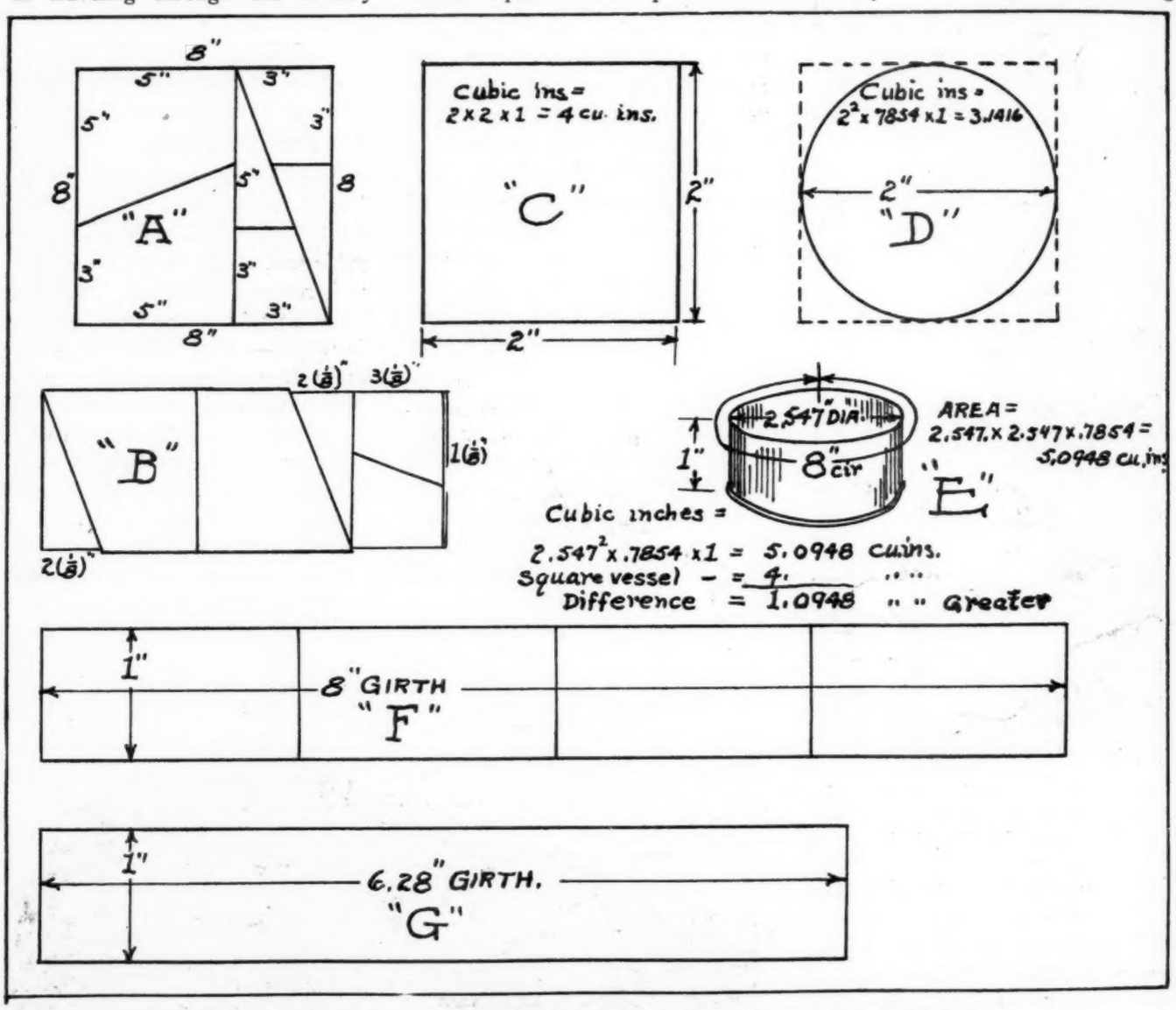
Kothe Prepares Numerous "Puzzles" Upon Which Sheet Metal Workers Can Practice at Their Leisure.

Brings Out Reason Why Round Vessels Hold More Than Square Containers of Similar Dimensions.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by O. W. KOTHE, Principal, St. Louis Technical Institute, St. Louis, Missouri.

MANY sheet metal workmen are interested in something that is of little value, especially that has some hook or crook to it that everybody else does not understand. So, in traveling through the country every now and then, the mechanic is quite forward in bringing forth some peculiar problem that has more of a puzzling aspect than any practical or theoretical value. In this case we have two such problems, which may help to set a few other workmen right as to their real merits.

The first problem is shown as "A," where a piece of metal 8x8 inches square is cut up in such a way that it is supposed to make 65 square inches. That is, its original size was to contain 64 square inches or 8x8 inches in size, and when it is reassembled it is to be 5x13 inches, thus giving 65 square inches. Now, to be able to stretch the metal that much, so to speak, is a puzzle to most workmen. But unfortunately the law does not hold good in geometry as it does in loaning out money for interest or something like that. Our drawing "A" shows the measurements for cutting up this piece of metal originally 8x8 inches square, while the drawing "B" shows the pieces reassembled so as to make a rectangle relatively



Patterns of Some of the Unusual Problems Which Often Confront Sheet Metal Men.

5x13 inches in size. Now, in using cardboard there is always a little stretching of the paper and the rough edges that would throw a person off sufficiently to make it appear that measurements were exactly right. By cutting each line on the bright tin accurately with a sharp, square shear, so that there is no pulling or drawing to the metal, and then reassembling it, a diagram will be obtained similar to "B." The slant lines take up a small fraction of an inch somewhat less than an ⅛ or a 1/16, which is often hardly noticed by the experimentist. But if accurate tab is kept, losses in size will be accounted for somewhat as we show in this drawing, which makes eight-eighths of an inch, and that is a square inch, which is accounted for. Because of this difference the tradesman is asked not to jump to conclusions at the first trial, but if accurate work is done, the shortage in "B" will be self-evident.

Another sort of conundrum is shown in drawings "C" and "D," where most workmen fail to see that a round vessel will hold more than a square vessel of similar dimensions. That drawing "C" is two inches square and contains four cubic inches, while drawing "D" is two inches in diameter and one inch high and contains 3.14 cubic inches. Then the difference in this tank or vessel will be in the corners, where the square vessel will take on more area because of the corners shown by the dotted position of "D" than the round cylinder. But here again in taking their girths or circumference we see that "C" requires eight inches of girth shown by "F," while "G" is the girth for "D" and only requires 6.28 inch, so there is some difference in circumference that cannot be compensated for in volume.

Now to consider a round vessel as "E," that has the same girth as "C," or eight inches; then the round vessel would have 2.547 inches in diameter. Figuring the volume for this diameter, we would have 5.0948 cubic inches. Here it is rather odd that the round vessel "E" has over five cubic inches of volume, while the square vessel has only four cubic inches, there being a difference of 1.0948 cubic inches where the round vessel is greater than the square vessel. The loss results in the corners; where these corners are sharp in "C" the metal crosses over itself, so to speak, while in a cylinder as at "E" the metal is continuous and does not interfere with an adjacent side.

Any workman can try out these things to his own satisfaction by making small models, and then making his calculation accordingly and the reason will become self-evident. So in reality there is no puzzling about the problems.

New Series of Lessons for Sheet Metal Apprentices Now Available Thru Manual Arts Press, Peoria.

Coincident with the greatly increased and varied present-day use of sheet metal, the problem of properly and adequately training sheet metal apprentices has assumed proportions of primary magnitude. It is no longer sufficient for an employer to expect the inexperienced boy unaided to cull from the maze of material now available on the subject of sheet metal designing, a course of study which will give him a solid foundation upon which to build.

Marion S. Trew and Verne A. Bird, through the Manual Arts Press, Peoria, Illinois, have made available in heavy paper covered book form a series of lessons in sheet metal problems and work, designed especially for the junior high schools, for beginners.

The authors are by no means unknown, Marion S. Trew being instructor in Sheet Metal Work, Washington Junior High School, Rochester, New York, and Verne A. Bird being the Director of Industrial Arts, Rochester, New York.

Such problems as the explanation of soldering process, system of measure and measuring tools, lock seaming, the construction of cooking utensils, oil filters and tables of weights and gauges of copper, alumwire, zinc, etc., and many other like problems are given.

The book sells for 85 cents and can be had through AMERICAN ARTISAN AND HARDWARE RECORD or the Manual Arts Press, Peoria, Illinois.

Lansing Sheet Metal Contractors Are Working Hard to Make State Convention a Success.

The Tuesday evening, November 20th, meeting of the Lansing Sheet Metal Contractors' Association was taken up with reports from the various convention committees who are arranging for the coming State Convention, to be held February 25th to 28th.

The hotel committee reported that the dates were very acceptable to the Hotel Kerns, which will be the official headquarters.

Floyd Harrington, of the Program Committee, stated that several good speakers were being considered and that announcement would soon be made of who they were.

The Entertainment Committee is working out plans which include a trip through the Reo Motor Car plant.

Secretary-Treasurer Frank Oberlin reported that the funds were coming in very nicely and that already a nice cash balance was on hand.

The association members in general are working hard to make this convention the most instructive and entertaining ever held by the Michigan Sheet Metal and Roofing Contractors' Association.

Want Ad Found Job for Man Before He Read It.

To AMERICAN ARTISAN:

You certainly get action quickly. I had a call this morning from a man who wants me to help him out. The call came before I got my copy of the paper in which the ad appeared. Thanks.

Yours,
C. W. WALKER.

Manning, Iowa, November 26, 1923.

Standard Specification for Tin Roofing Describes Proper Method of Laying and Painting the Tin.

Rules Are Also Given for Making Flat and Standing Seams, as Well as for Valleys, Gutters and Fastenings.

THE following extract from the "Standard Specification for Tin Roofing, for Architects' Use," which was prepared by N. & G. Taylor Company, manufacturers of the famous "Target and Arrow" brand of roofing tin, contains so much useful information for the sheet metal contractor that we are glad to give it further publicity:

Tin Roofing Work.

No substitute for this brand will be allowed. Use IC thickness for the roof proper, decks, etc., and IX thickness for valleys, gutters, flashings, counterflashings and spouts, as required by design. One coat of red lead, iron oxide, metallic brown or Venetian red paint, with pure linseed oil, shall be applied to the under side of the tin before laying.

Flat Seam Roofing.

For flat-seam roofing, edges of sheets to be turned one-half inch; all seams to be locked together and well soaked with solder. Sheets to be fastened to the sheathing-boards by cleats spaced eight inches apart, cleats locked into the seams and fastened to the roof with two one-inch barbed wire nails; no nails to be driven through the sheets.

For Standing Seam Roofing.

For standing-seam roofing, sheets to be put together in long lengths in the shop, cross seams to be locked together and well soaked with solder; sheets to be made up the narrow way in the rolls and fastened to the sheathing-boards by cleats spaced one foot apart.

Valleys and gutters to be formed with flat seams well soldered, sheets to be laid the narrow way.

Flashings to be let into the joints of the brick or stone work, and cemented. If counterflashings are used, the lower edge of the counterpart shall be kept at least three inches above the roof.

Solder to be of the best grade, bearing the manufacturer's name, and guaranteed one-half tin and one-half lead—new metals. Use rosin only as a flux.

Caution: No unnecessary walking over the tin roof or using same for storage of material shall be allowed. In walking on the tin care must be taken not to damage the paint nor break the coating of the tin. Rubber-soled shoes or overshoes should be worn by the men on the roof.

Painting Tin Work.

All painting of the tin work to be done by the roofer, using red lead, iron oxide, metallic brown or Venetian read paint, with pure linseed oil—no patent dryer or turpentine to be used.

All paints to be applied with a hand-brush and well rubbed on. Tin to be painted immediately after laying. A second coat shall be applied in a similar manner, two weeks later.

No deviation from these specifications shall be made unless authority is given in writing by the architect. Only a first-class roof will be accepted.

Good Advertising Cannot Successfully Push an Inferior Product.

The business world contains too many proprietors or would-be proprietors who do not understand the real purpose or object of advertising.

Commercial publicity, no matter how good it is, cannot put over a poor product. In buying an automobile for delivery work the retailer does not order a touring or pleasure car; neither does he pile four tons on a truck with a 1-ton capacity, for the simple reason that a 1-ton truck would not carry the load, nor would the touring car be suitable for delivery purposes.

Under these circumstances, why is it that these men persist in trying to make advertising carry a load for which it was not designed?

Advertising to be successful must be founded upon a sound fundamental basis; that basis is that the product pushed must serve a legitimate purpose; it must in some way actually save time, labor or add to the convenience of its purchaser. Then when it is brought to the prospective customer's attention, through the medium of advertising, its utility value will be learned and appreciated, and the desire for possession will be the natural consequence.

The prospective customer learns from the advertisement what purpose the article will serve, its price and quality. This is the primary object of all commercial publicity, and to try to make the vehicle advertising do anything but this is a futile expenditure of effort and disastrous when it comes to building a permanent business.

The stove, sheet metal and warm air furnace industries contain unusually fertile fields for advertising, but don't make the mistake of thinking that "clever" advertising, not based upon the correct fundamental principles, is going to crown every selling campaign, regardless of whether the product has merit and durability, with success.

In beginning a campaign every retailer should first decide how much he wishes to spend on advertising before he starts out. A fair estimate would be 1½ or 2 per cent on gross turnover. Having done so, he must determine what mediums he will use. There are several which are well adapted to his purposes; namely, the window display, the local newspaper, direct-by-mail, and the billboard. Of these, the window display is perhaps the best. The windows are the eyes of the store; make them attractive and—well, you know the rest. The local newspaper is next, followed by the direct-by-mail form.

In advertising in the local newspaper, however, the retailer should use his best judgment as to the location for the ad in the paper and then adjust the size of the ad in accord-

ance with the size of the appropriation determined on beforehand. Some allowance should be made for increasing the size of the newspaper ad whenever a special occasion, such as a holiday, arises. A little thought will enable him to write good advertising copy. His primary object, of course, is to sell goods.

Kentucky Sheet Metal Contractors Will Meet to Form State Organization December 11.

Secretary Edwin L. Seabrook, of the National Association of Sheet Metal Contractors, announces in a telegram received Friday morning that a convention has been arranged for, to be held Tuesday, December 11th, at Hotel Tyler, Louisville, at which a state association will be organized by the sheet metal contractors of Kentucky.

Death Takes Cyrus M. Hefley, Dixon Sheet Metal Contractor.

The funeral of Cyrus M. Hefley, sheet metal contractor, Dixon, Illinois, who passed away at the Globe Hospital in Freeport Wednesday noon, November 21st, was held at his home, 1022 Peoria Avenue, Dixon, at 1:30 o'clock Saturday afternoon, and at the St. Paul's Lutheran church at 2 o'clock, Rev. Lloyd Walter officiating, and with burial at Oakwood.

Mr. Hefley was born in Montgomery County, Illinois, February 28, 1860, being the oldest son of Mr. and Mrs. L. L. Hefley, now of Sterling, who still survive him. The family lived in Montgomery County until the deceased was seven years of age, when they moved to Whiteside County, where he worked on his parents' farm until reaching his majority.

He then took up railroading, which he continued for 26 years, retiring to go into business at Dixon. He was married May 10, 1888, to Miss Clara J. Moseley of Dixon, and she, one son Arthur, and two grand children, Robert and Edward, survive him. A brother, George Hefley, of Cleveland, Ohio, and a sister, Mrs. Mollie Senneff, of Sterling, Illinois, also mourn his passing.

Mr. Hefley was a member of the Brotherhood of Locomotive Engineers for 36 years and was also affiliated with Dixon Lodge of Elks. A host of friends will mourn his passing and condole with the bereaved relatives.

Notes and Queries

Combination Coal and Gasolene Range

From Asemissen and Klinger, Oelrichs, South Dakota.

Will you kindly inform us who makes a combined coal and gasolene range.

Ans.—As far as we know, there is no such range made. However, a combination coal and kerosene range is manufactured by A. J. Lindemann-Hoverson Company at Milwaukee, Wisconsin.

Repairs for "Vacuum" Furnace

From William Fiebrantz, 209 North Sixth Street, Omaha, Nebraska.

Please advise me where I can secure repairs for the "Vacuum" furnace.

Ans.—From the manufacturers, Vacuum Furnace Company, Omaha, Nebraska.

Steel Plates.

From V. L. Moran, Manilla, Iowa.

Can you tell me where I can purchase steel plates 3/16 inch thick, 12 inches in diameter, with an 8-inch hole in the center?

Ans.—Joseph T. Ryerson and Son, 2558 West 16th Street, Chicago, Illinois.

Spinning and Stamping

From S. D. Helm Manufacturing Company, 115½ East Pike Street, Crawfordsville, Indiana.

We should like to know of some firm in Chicago that does spinning and stamping.

Ans.—Mid City Metal Spinning Company, 426 South Clinton Street, Chicago, Illinois.

Steel Stove Collars and Caps

From The Ohio Foundry and Manufacturing Company, Steubenville, Ohio.

Can you tell us where we can get steel stove collars and caps about 3 inches in diameter?

Ans.—The Excelsior Steel Furnace Company, 118 South Clinton Street, Chicago, Illinois.

Retinning Outfit for Milk Cans

From Galesburg Radiator Works, 43 North Kellogg Street, Galesburg, Illinois.

Please advise where we can buy retinning outfits for retinning milk cans and other articles.

Ans.—Callender Soldering Process Company, 12 South Jefferson Street, Chicago, Illinois.

Gas Stove Fittings

From W. H. Cain Gas Radiator Company, 5215 Monóta Avenue, Los Angeles, California.

Kindly advise us who manufactures gas stove fittings.

Ans.—George M. Clark and Company, 179 North Michigan Avenue, Chicago, Illinois; Dangler Stove Company, Cleveland, Ohio; Quick Meal Stove Company, St. Louis, Missouri; Reliable Stove Company, Cleveland, Ohio; New Process Stove Company, Cleveland, Ohio; all divisions of the American Stove Company; Fanner Manufacturing Company, Cleveland, Ohio; McRae and Roberts Company, 227 Campbell Avenue, Detroit, Michigan; Detroit Brass Works, 331 Holden Avenue, Detroit, Michigan; H. Mueller Manufacturing Company, Decatur, Illinois, and Rockford Brass Works, Rockford, Illinois.

Furnace Gas Burners and Regulators

From C. L. Epps, Van Wert, Ohio.

Please give me addresses of manufacturers of gas burners for burning natural gas in furnaces; also regulators for controlling the flow of gas in same.

Ans.—1. Standard Heating and Radiator Company, Pittsburgh, Pennsylvania; Haynes-Langenberg Manufacturing Company, 4057 Forest Park Boulevard, St. Louis, Missouri; Oliver Oil-Gas Burner Company, 7th and Market Streets, St. Louis, Missouri; C. M. Kemp Manufacturing Company, 7341 South Union Avenue, Chicago, Illinois, and Union Gas Burner Company, 367-369 Ellicott Street, Buffalo, New York. 2. Charles F. Brand, 16th and Jacob Streets, Wheeling, West Virginia; Peck and Young Manufacturing Company Station Bristol, Forestville, Connecticut, and C. J. Tagliabue Manufacturing Company 20 23rd Street, New York City.

Aluminum Ware Window Display Which Sold 6,000 Pieces During a 1-Day Sale.

Display Made Thursday; Sale Following Monday Drew Such a Large Crowd Clerks Were Obliged to Enter Rear Doors.

THIS is the season of the year when the demand for all kinds of kitchen ware is the greatest. The canning season, it is true, creates a large demand for some types of kitchen ware, but the holiday season creates a demand for every form of edible.

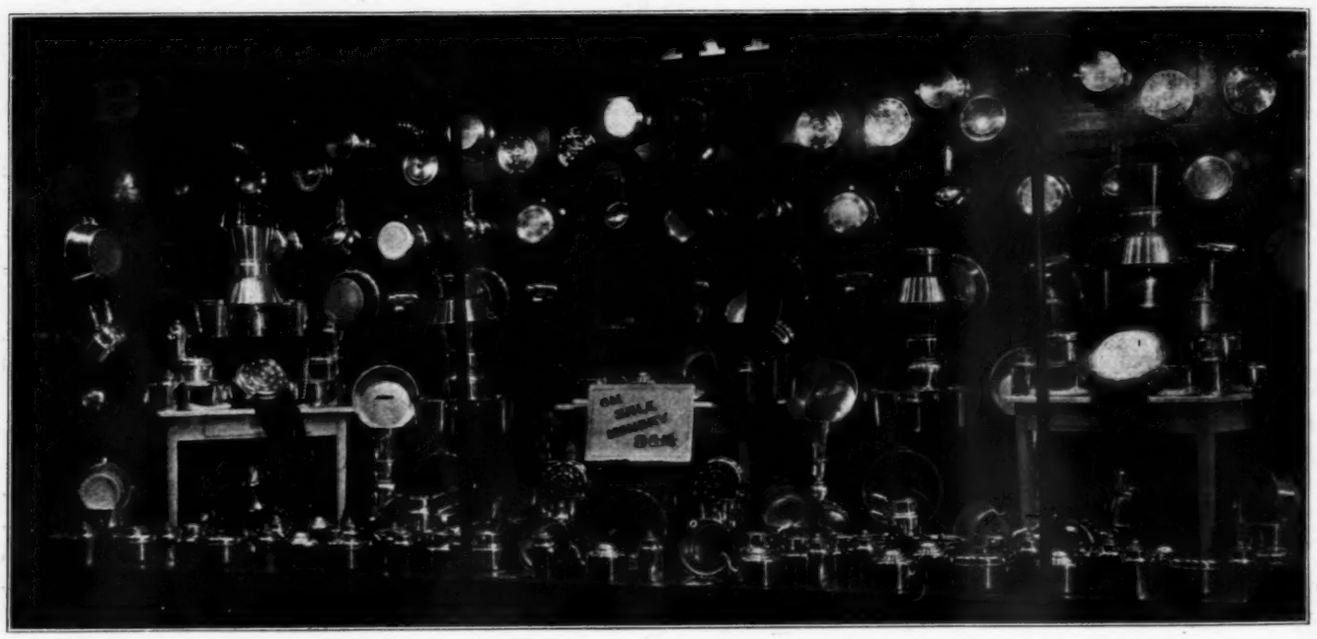
The Christmas turkey suggests roasters and all manner of pans; the cranberries call to mind the necessity of a new sauce pan, while the various other complements to every well-prepared Christmas dinner creates demand for just that many more pans and pots, and you can sell these if you make your suggestions properly and timely.

The accompanying illustration shows how Otto J. Gress arranged an aluminum window display for a special sale at the Bunting Hardware Company, 810 Walnut Street, Kansas City, Missouri.

Mr. Gress says that the display first appeared in the display window of the store on Thursday. The sale was scheduled for the following Monday. When that day arrived, the crowd before the door was so great that the employes and clerks had to be admitted through the rear entrances.

The sale was a one-day affair and over 6,000 pieces of aluminum were sold during the day.

Here is food for digestion which will help you to arrange your Christmas displays.



Display of Aluminum Ware Made by Otto J. Gress for the Bunting Hardware Company, 812 Walnut Street, Kansas City, Missouri, Advertising a 1-Day Sale.

Cash in on AMERICAN ARTISAN Window Display Contest January 12, 1924.

This is December 1.

One month and twelve days from today AMERICAN ARTISAN AND HARDWARE RECORD will give away $100 in four cash prizes to the men sending in the four best photographs of window displays on or before that date.

Here is a splendid opportunity to add to your prestige as a window trimmer.

Permit your natural artistic instincts to function.

New ideas for window arrangements are constantly coming into your head.

Make use of them.

Make yourself the Edison of window trimming.

The following simple rules will govern the contest:

Rules Governing Contest

The photograph, together with descriptions of how the window displays were arranged and the materials used may be sent by mail or express, charges prepaid, and must reach this office not later than January 12, 1924.

Each photograph and description must be signed by a fictitious name or device and the same name or device must be placed within a sealed envelope containing the real name and address of the contestant. This sealed envelope is to be enclosed with the photograph. Contestants may enter as many window displays as they desire.

AMERICAN ARTISAN AND HARDWARE RECORD reserves the right to

publish all photographs and descriptions submitted in this competition.

A competition committee of three will be appointed, one of whom will be an expert window dresser and one an experienced hardware man. This committee will pass upon the merits of all photographs and descriptions received, without knowing the names or addresses of the senders, and will decide the winners of the contest.

Retailer Losing Profits by His Indifference to Window and Show Case Displays.

Does Not Recognize Most Ordinary Principles of Display Art—His Case Is Typical of Many Stores in All Lines.

FEW men will deny that the annual cost of indifference in business is great. Aside from the truth that a condition of indifference in character or quality suggests mediocrity, the actual loss in profits from a lack of vigilance or a disregard for tried and proved business practices is harmful both to the storekeeper and to the community. The inevitable result of slovenliness in business is failure, but failure is a tax upon the community in which it occurs.

Recently I had occasion to buy a small quantity of paint and betook myself to a hardware store which I knew to be not far distant, in one of Chicago's suburbs. I must confess, had I not known, from having passed there daily that the store actually existed, I should certainly not have learned that fact from any show window, sign, etc.

The display window of the store looked as though a sample of everything carried in stock had been placed in it and then the owner had stirred the numerous articles into one conglomerate whole with a stick, in much the same manner as the cannibal was won't to stir the various ingredients of his stew. The window looked like a second-hand junk shop from the outside.

Upon entering the store, I was confronted with a mass of tools, building materials, and all manner of accessories in season and out. Down the center of the store I proceeded picking my way along a narrow aisle and passing as I did some show cases filled to overcrowding with door hinges, knobs, nails, screws and many other small objects; while over the outside of the cases there lay a coat of dust and grime so thick as to make the glass all but impervious to the light. Here I encountered another customer who was just leaving the store with a package under his arm, and I almost lost my balance in trying to give him room enough to pass in the narrow aisle.

Finally I succeeded in reaching the back end of the store, the only place apparently where the proprietor waited upon any customer, because, in fact, that was the only place where he could possibly approach a customer.

A young man inquired after my wants, and upon being told that I wished a can of varnish, he disappeared from view and was gone for about five minutes. When he returned, he carried a can of enamel instead of varnish. I then informed him that he had mistaken my order, whereupon he disappeared a second time, returning this time with the varnish. When I inquired the price of the varnish, he thought for a while, examined the number on the can, looked it over and then excused himself a second time while he consulted the proprietor. In this transaction, buying a 65 cent can of varnish, I consumed no less than fifteen minutes and while I was thus engaged in "waiting" my attention was so taken up with making room for other customers to pass in the narrow aisle, that not a single additional purchase suggested itself to my mind while I was in the store.

Now, it so happened that I was at that very time engaged in furnishing an apartment in the neighborhood of the store and there were at least a dozen things that I found it later necessary to purchase from a hardware store for the apartment, and which I would have purchased in that store before leaving it that night had these things been suggested to me either by a diplomatic arrangement of show cases or by an adroit and wide awake clerk; instead of making a 65 cent sale, the clerk could have sold me $15 worth of goods.

Apparently the man had a stock turnover in some articles rapid enough to permit him to remain in business, but only because he had no competitors in the immediate vicinity.

The Digest of Trade Conditions of the Central Trust Company of Illinois for November, 1923, shows that there were 1,253 business failures in the month of September.

Certainly one of the most flagrant contributory causes of failure in business, especially a business that has been established for a number of years, is the neglect to take advantage of every legitimate opportunity to increase the number of sales, thereby cutting down the overhead cost per sale and placing the business on a firmer financial basis by speeding up the machinery which creates available capital.

The store heretofore mentioned is located on a street where a large number of people pass daily going to and from the city. The proprietor could increase his sales greatly and render better service to the customers if he would take the trouble to observe a few of the most commonly recognized business helps such as making appropriate displays—both window and showcase, and orderliness in the store. He is losing profits and his customers are losing service.

When a merchant uses a bookkeeping method so unwieldy that he cannot tell a customer how much his indebtedness is without keeping him waiting, or asking him to call again, he has a system that is going to prove expensive.

*If You Are a True American, Join the March of Health.**

Give the National Tuberculosis Association Your Support in the Sixteenth Annual Christmas Seal Sale.

SOME persons go through life with habits, convictions and customs unchangeable. They are as capable of being influenced and affected by surrounding circumstances as Private Indigo Snow's shoes. The story goes, according to the American Legion Weekly, that the supply sergeant had just issued the last assortment of shoes to the colored outfit. There were plenty of kicks, but the loudest and most prolonged came from Private Indigo Snow who, failing to receive satisfaction elsewhere, betook himself to the captain.

"Cap'n, suh," he announced, "mah shoes am too big fo' me."

"You'll have to make the best of it," answered the captain. "Plenty of men have shoes that don't quite fit."

"Don't quite fit!" ejaculated Indigo. "If you' says 'tenshun cap'n, ah comes to 'tenshun. Den if yo' says to right about face ah right about faces, but mah shoes stays at 'tenshun. Don't quite *fit?* Huh!"

The story does not tell, but we surmise the captain saw to it that Mr. Snow was given other shoes! He did not wish the march held back.

Well, some persons have ingrained customs that are holding them back in a march, exceedingly important—the march of health. Private Indigo's shoes are not a patch on the way men and women stand still in the progress of health.

Take, for instance, those who believe they must live as their ancestors lived. "Grandfather never opened his windows in the winter," they will say, "and he lived to a ripe old age. All tommy-rot, such silly ideas!" They believe that night air is unhealthy. They think that doctors exist to cure only and never realize that prevention of sickness is what makes healthy communities. They are loathe to accept the doctrine of daily health habits; they are unwilling to coöperate with public health nurses, open-air schools, proper nutrition for their growing sons and daughters. They never think of going to clinics for thorough overhaulings in order to catch sickness in time for curing it. They believe the thing to do is to work until one is in bed, sick and suffering, before a doctor is consulted. They cannot understand that, with a general health condition good, disease germs will seldom attack. Old customs, old habits of living, old methods of thinking and acting cling to them like the poorly-fitting shoes.

In many cities and towns where there is a large foreign element the diseases that are spread by infection flourish most. The germs of tuberculosis, for example, are carried through careless habits, and can lie dormant in the system until lowered resistance after some such sickness as pneumonia, influenza, or a weakened general health condition sets them ablaze and active. It is a disease that takes a large death toll from among our foreign element. We find families coming to this country from lands where there has been plenty of chance to breathe clean fresh air, eat green vegetables and enjoy the sunshine. Here they may have to live in crowded tenements, eat improper, cheap food, poorly cooked, and have little opportunity to be out-of-doors. Their powers of resistance become weakened and because, they have never been taught how to lead daily health habits, they get tuberculosis. They do not realize that although all about are the germs, they can escape infection if they but coöperate with health workers.

Such carelessness as is seen in the following instance teaches the need for understanding and heeding health habits: A tuberculous worker in a cotton mill was seen to spit carelessly on the floor. He then walkes on, not knowing that a fellow worker and friend coming behind him was to carry home the sputum on his shoes and bring great tragedy to a happy family. The friend, all unconscious of the germs, walked into the room where his little daughter was playing on the floor. The germs left there attached themselves to a plaything, which the child put into her mouth and was thus infected. She had a cold at the time and, because there was little resisting power, her case developed most rapidly. She soon died, but not before the mother had contracted tuberculosis. Full of sympathy was the tuberculous spitter and unconscious wholly that he might well be called a murderer in the first degree.

Roller towels, common drinking cups, food exchanged at the lunch hour are some other ways by which the man who may not even know he has tuberculosis is likely to give the disease to someone else. Can anybody say it is not necessary to learn and then help others?

In many work places the health conditions have been greatly improved in recent years. It is almost impossible, however, to enforce rules upon those who sometimes cannot or will not even read them. Everybody must first understand the reasons for practising good health habits and then work together to stamp out disease. An intelligent worker should not watch a newcomer in his factory spit on the floor, and either ignore the incident or dismiss it with a disgusted comment. If his conscience is working he will take some action

*Story by Elizabeth Cole, Assistant Publicity Secretary National Tuberculosis Association, 370 Seventh Avenue, New York City, published by American Artisan and Hardware Record in its publicity coöperation to assist the Association in pushing the Sixteenth Annual Christmas Seal Sale.

to have the man understand *why* he must not spit on the floor. In such ways only, with each individual feeling his responsibility in the progress of health, can we get the best of tuberculosis.

New York City, with its large foreign and American population all rolled into one, offers an excellent opportunity to study racial reactions to tuberculosis. In that city recent statistics show that during a four-year period, 1918-1921, inclusive, the death rate from pulmonary tuberculosis averaged 122 per 100,000. Among the native born it was 108 compared with 149 for the foreign born. The population census of New York City, January 1, 1920, was 3,620, 383 native born; 1,999,665 foreign born. Among the Finns and the Irish of that city it was three times as high, being respectively 342 and 306 per 100,000. Among the Russian-born and Roumanian-born, on the other hand, the rate was only 86 and 92 respectively. The Chinese rate was extremely high, being 825. The Scandinavian rate, (which includes Norway, Sweden and Denmark) was 206. The Scotch (181) is higher than the English (136). France and Germany had rates very close, being 130 and 133 respectively. The Italians were in the low death rate class with the Jews (Roumanians and Russians) and the United States born, and their rate was 122.

Local tuberculosis associations will furnish speakers who can give talks, show motion pictures or lantern slides, supply posters and pamphlets to explain the enemy, tuberculosis. They will be glad to assist anyone who has tuberculosis in finding a sanatorium or hospital. They will arrange for and explain the need of physical examinations, in order that the disease may be caught in time for cure.

If you have any influence whatsoever, and everybody has some, don't let anyone about you wear handicapping shoes like Private Indigo's. They are keeping the country back in its educational campaign to stamp out tuberculosis. They are not marching with America's health army. They are not true Americans, for a true American is a healthy American.

A timely way to coöperate is through the Christmas seal sale to be held in December. Everybody has a chance to buy and sell and talk about the little penny seals that are responsible for carrying on the fight against the Great White Plague.

Some Christmas Selling Hints That Will Increase Electrical Appliance Sales.

The application of electricity to every-day household tasks has been an important step toward the attainment of better and happier homes and more leisure hours for our women folk, but we cannot expect to sell this equipment by the same means we sell staple articles.

Every electrical appliance should be completely and thoroughly demonstrated so that when it is installed in the home it will accomplish the results promised. It makes little difference to a woman whether her washing machine is a cylinder type, a vacuum cup or a dolly type so long as it washes clothes clean in less time and with less energy than formerly.

Likewise the best way to sell her an ironing machine is to prove to her entire satisfaction that it will iron 98 per cent of the family wash in one hour as against three hours by hand.

The mechanism of her dishwasher does not impress her nearly as much as the fact that dishes need to be washed but once a day when washed electrically, and that she can forever dispense with unsanitary dish mops.

With these thoughts in mind, the salesman will impress the housewife with the results to be obtained by using electrical household equipment, at the same time explaining and demonstrating the equipment in such a way that the woman is neither confused nor perplexed.

Whenever possible, selling should be done in a "home atmosphere"—in a section of the store or show room which does not invite bystanders, because every woman is more or less conscious about using any mechanical device for the first time and is apt to forego the purchase rather than learn to operate it before an audience.

When selling table appliances, the best results are obtained if samples of foods which have been prepared on electric table stove, toaster or percolator are served to interested customers. This may be a more expensive means of advertising than most dealers like to indulge in, but wherever it has been tried, the ends have more than justified the means.

Having a supply of tempting recipes on hand is another effective means of interesting the housewife. So many women run out of ideas, especially in the use of "left overs," and will welcome any suggestions that may be offered regarding a menu for luncheon, dinner or supper and will, at the same time, note the recommendations made regarding the preparation of these dishes on electric table stove or grill.

The sooner the appliance salesman gets away from technical explanations and engineering terms and sells electrical household equipment on the basis of what it will do instead of how it does it, the sooner will the housewares department enjoy the prominent place on the balance sheet which it rightfully deserves. . .

Fare-and-One-Half Is Granted for Kansas City Convention, January 15 to 17, 1924.

Secretary H. J. Hodge, of the Western Retail Implement and Hardware Association, has received notice from the Passenger Associations that a rate of one and one-half fare on the certificate plan will be granted for the convention of that Association to be held in Kansas City, January 15, 16, 17, 1924, from points in Colorado, Iowa, Nebraska, Illinois, Kansas, Missouri, Oklahoma, Arkansas (including Memphis, Tennessee,), and Texas.

Only certificates which show the purchase of tickets on January 11th to 17th, inclusive, when validated will be honored for return ticket at one-half fare if presented not later

than January 21, 1924. All certificates will have to be presented at the Secretary's desk in the Coates House lobby for validation.

Thank You! Mr. Lamphere; We're Glad You're Glad Our Paper Helps You.

To AMERICAN ARTISAN:

I think the ARTISAN is the only paper in its line. I have used it since 1914.

V. A. LAMPHERE.

314 French Street, Buffalo, New York, November 22, 1923.

Federal Trade Commission Rules Guaranteeing of Prices May Be in Restraint of Trade.

Whether the practice of sellers in guaranteeing their prices against a decline is desirable policy is a question that has often been debated. In a period when the general trend of commodity prices is upwards buyers are not so keen for this assurance, but in a time of uncertainty like the present they are naturally anxious for protection. In 1920 when prices broke sharply it was maintained by critics of this system that it proved an obstacle to readjustment, as sellers who had guaranteed their prices to buyers resisted repricing their stocks on the basis of replacement costs until these guarantees were out of the way.

Be all this as it may, the Federal Trade Commission has taken the position that collective action by wholesalers to force manufacturers to guarantee prices against a decline constitutes unfair competition such as comes within the purview of the anti-trust laws, and it has issued an order against the St. Louis Wholesale Grocers' Association, ordering it to discontinue such alleged practices. The commission specifically prohibits the practice of reporting and publishing lists of manufacturers who refuse to give guarantees, and boycotting or threatening to boycott manufacturers who do not guarantee their prices. This action, it will be noted, does not touch the merit of the policy of price guarantee, but is aimed at the methods employed to enforce its adoption.

Don't Argue with Customers About Prices in Other Stores.

If a customer insists that she can buy the same article you are showing her cheaper at a rival store, be very wary of a flat denial of the statement. It is better to draw her out to talk about the other article and describe its points, at the same time bringing out the good points of what you are displaying. You may convince her that yours is superior in fabric or workmanship, but if she insists that the other store is selling the same article cheaper, better encourage her to go there with the virtues of your goods still fresh in mind and make a comparison, at the same time making a report to your manager, so that he may investigate. Naturally if you are being undersold you want to know it, and simply arguing one customer into your point of view will not remedy the competition even if you are able to make this one particular sale.

Coming Conventions

Meeting to Organize Kentucky Sheet Metal Contractors' Association. Tuesday, December 11, 1923, at Hotel Tyler, Louisville.

Western Retail Implement and Hardware Association, Missouri Theater Building, Kansas City, January 15, 16, 17, 1924. H. J. Hodge, Secretary-Treasurer, Abilene, Kansas.

The West Virginia Retail Hardware Association Convention and Exhibit, Huntington, West Virginia, January 15 to 18, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Mountain States Hardware and Implement Association Convention, City Auditorium, Denver, Colorado, January 22-24, 1924. W. W. McAlister, Secretary-Treasurer, Boulder, Colorado.

Kentucky Hardware and Implement Association, Louisville, January 22-25, 1924. J. M. Stone, Secretary-Treasurer, 202 Republic Building, Louisville.

Indiana Retail Hardware Association, Inc., Convention and Exhibition, Cadle Tabernacle, January 29, 30, 31, February 1, 1924. G. F. Sheely, Secretary, Argos.

Illinois Retail Hardware Association, Hotel Sherman, Chicago, Illinois, February, 1924. Leon D. Nish, Secretary-Treasurer, Elgin, Illinois.

Nebraska Retail Hardware Association, Lincoln, Nebraska, February 5 to 8, 1924. George H. Dietz, Lincoln Nebraska, Secretary-Treasurer.

Wisconsin Retail Hardware Association Convention and Exhibition, Milwaukee Auditorium, February 6, 7, 8, 1924. George W. Kornely, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee. P. J. Jacobs, Secretary-Treasurer, Stevens Point.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 12, 13, 14, 1924. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Iowa Retail Hardware Association, Des Moines, Iowa, February 12, 13, 14 and 15, 1924. A. R. Sale, Secretary-Treasurer, Mason City, Iowa.

The Pennsylvania and Atlantic Seaboard Hardware Association, Incorporated, Convention and Exhibition at the Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14 and 15, 1924. Sharon E. Jones, Secretary-Treasurer, Wesley Building, Philadelphia.

Ohio Hardware Association, Convention and Exhibition, Cincinnati, Ohio, February 19, 20, 21 and 22, 1924. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

New York Retail Hardware Association Convention and Exhibition, February 19, 20, 21, 22, 1924. Headquarters, McAlpin Hotel, and exhibition at Seventy-first Regiment Armory. John B. Foley, Secretary, 412-413 City Bank Building, Syracuse, New York.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, February 20, 21, 22, 1924. George A. Field, Secretary, 10 High Street, Boston, Massachusetts.

North Dakota Retail Hardware Association Convention and Exhibition, Municipal Auditorium, Fargo, February 20, 21, 22, 1924. C. N. Barnes, Secretary, Grand Forks.

Michigan Sheet Metal and Roofing Contractors' Association, February 25 to 28, 1924, Hotel Kerns, Lansing. T. E. Eiderle, Secretary, 1121 Franklin Street, S. E., Grand Rapids, Michigan.

Missouri Retail Hardware Association Convention and Exhibition, Marquette Hotel, St. Louis, February 26, 27 and 28, 1924. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis.

Minnesota Retail Hardware Association Convention and Exposition, St. Paul Auditorium, February 26, 27, 28, 29, 1924. C. H. Casey, Secretary, Jordan, Minnesota.

South Dakota Retail Hardware Association and Exposition, Coliseum Building, Sioux Falls, March 4, 5, 6, 7, 1924. C. H. Casey, Secretary, Jordan, Minnesota.

California Retail Hardware Implement Association Convention and Exhibition, Civic Auditorium, San Francisco, March 18, 19, 20, 21, 22, 1924 LeRoy Smith, Treasurer, 112 Market Street, San Francisco.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee, Convention and Exhibition, Atlanta, Georgia, May 27, 28, 29, 1924. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta.

Hardware Association of the Carolinas Convention, Wrightsville Beach, North Carolina, June 17, 18, 19, 1924. T. W. Dixon, Secretary-Treasurer, 717-718 Commercial Bank Building, Charlotte, North Carolina.

Here's Proof That Voss, Byron, Nebraska, Believes in Efficiency of Display to Produce Range Sales.

Makes Special Range Sales Effort During Demonstration Week Held at Byron, October 13 to 20.

PERHAPS the forebears of C. F. Voss were not among the young men who heeded the advice of that far-famed and venerable gentleman from New York, Horace Greely, who as you know, advised the young man to go west. But then again perhaps they were.

There is no more interesting way to present a prosaic subject than to represent graphically the products made possible by the ownership of the object or machine you are trying to sell.

The stove bakes bread, cakes, pies and all manner of good things to eat, and here again Mr. Voss has taken advantage of the possibilities to increase range sales; to wit, the smiling lady holding a freshly-baked and delicious cake of the kind that makes your mouth water.

Majestic Range Display Put On by C. F. Voss, Byron, Nebraska, During Demonstration Week, October 13.

At any rate C. F. Voss is located at Byron, Nebraska, where he sells stoves, hardware and furniture.

In selling stoves he has not lost sight of that most important adjunct to retail salesmanship, the window display. That he appreciates the psychology of using a customer's name is also evident from the illustration shown.

Here is a neat range shown, manufactured by the well known Majectic Company, Huntington, Indiana.

The demonstration and free set of ware are additional good features and well designed to bring customers into the store.

The window was decorated by Fritz E. Voss and the photograph was taken by the Reverend R. Wagner.

Band Practice Night Draws Many Customers to Stove Department.

The experience of a Western stove merchant will interest stove manufacturers and perhaps manufacturers of other products also, especially those whose dealers make a practice of taking used goods in partial exchange for new.

This particular man discovered, as many other stove merchants have found through experience, that advertising rebuilt stoves is not the same sort of an advertising problem as advertising new stoves. He has generally but one or two makes of new stoves to sell. While his advertising deals with these stoves specifically, it is cumulative, and brings results steadily in proportion to its strength and frequency.

Advertising a rebuilt stove, however, is not that sort of a problem at all. The first reason why it is not is because his stock of rebuilt stoves may comprise several makes and his stock may constantly change. Advertising a particular rebuilt stove by name when he may have but one or two such stoves in stock would represent an advertising waste when the advertising brings more buyers than there are rebuilt stoves. It is the experience of many stove dealers that better results are to be obtained when display space is used to describe the rebuilt stove department, or to describe a number of rebuilt stoves, than when separate classified advertisements are used to describe individual makes.

This merchant found by experience that it was better to tell the public that it maintained a rebuilt stove department and make them remember it by advertising than to advertise particular rebuilt stoves, as it happened to have them. The company did something in addition to using display space more or less unconventional, but nevertheless effective for the purpose—which brought immediate results.

What it did was to make an arrangement with the best jazz band in the town to do its practicing in the company's showroom one evening a week. This fact was made

the subject of an advertisement in connection with the rebuilt stove department and an invitation was extended to the public to be present.

By this means many people were attracted to the company's showroom on practice nights. The location of the showroom became very well known and the showroom itself was arranged so that everybody who came was made well aware that a number of rebuilt stoves were for sale.

Another thing which the company did was to arrange a jingle contest and offer $1 to everybody who would write and forward to the firm an acceptable jingle concerning rebuilt stoves. Every jingle accepted and published earned a dollar.

Selling Stoves on a Price Versus Service Basis.

The accompanying advertisement is reprinted from the *Green Bay, Wisconsin, Gazette*. The layout is good; the headline is striking and well designed to attract attention; a good use of white space has been made.

The arguments set forth are strong and to the point; the command, "Now Is the Time to Buy" is also well taken.

In spite of all these good points, however, there are some suggestions which could be made. The words: "Our stock of base burners and coal heaters is complete" certainly does nothing to influence a buyer to come into the store in preferance to going somewhere else to buy a stove.

The real test of the pulling power of an ad is how does it strike you after you have put yourself in the customer's place? You may think this hard to do, but you need only forget all you know about the selling of stoves and then read the ad. Having done this, what is your reaction toward the ad? Do you find anything in the ad which would make you want to buy Jones' stove in preference to one of his competitors advertised in the same paper?

The introduction of the ad is very good; why not follow it out in the same way? The customer is thinking on the subject of cold weather approaching and the necessity of resorting to artificial heat in the home. Why not draw a little word picture of the comforts to be obtained from the stove and then tell the price at which it can be had. In this way you can sell stoves on a quality and service basis, making the price appear to be a secondary consideration. Selling on a price basis is very poor business where permanency is desired.

Advertisement Shows a Good Use of White Space, While the Selection of Type Sizes Is Also Good.

Here's a Warning to All You Men Without Insurance.

Not very long ago a hardware dealer in Oklahoma suffered a total loss by fire. His assets before the fire were about $25,000. After the fire occurred his assets after his indebtedness was paid, were reduced to $350. He had no insurance. This statement comes from the credit department of a large wholesale concern in Kansas City. It should serve as a warning for the dealers who are not carrying adequate insurance. The credit departments of all wholesale houses are watching closely to see that dealers to whom they are granting large lines of credit carry adequate insurance and the dealer who does not do so jeopardizes his credit.

There is no other quality in your advertising that can make up for the lack of sincerity.

The Importance of a Critical Contrast in Advertisement Building Cannot Be Overestimated.

Make Your Christmas Gift Suggestions Definite and Quote Prices—Study Carefully the Two Ads Below.

THERE is no more forceful means of bringing out both the good and the bad qualities of two advertisements than by placing them in juxtaposition for comparison or contrast. This practice gives the copy writer a sort of hypothetical standard of perfection or medias rés towards which he can look when building.

It is our purpose here to point out the best methods of using advertising space; to produce *constructive* criticism, and to put the facts of the trade before the reader so that he will be in a better position to construct his holiday advertising.

We have placed together two Christmas ads which we believe form a very good contrast. Note how the effect upon the eye differs where the illustrations are used and where they are absent.

The smaller ad is very attractive, but its efficacy to pull orders is grossly inferior to the one with the illustrations. Except, perhaps, that the meat grinder could have been omitted from the gift list, there is no fault to find with the suggestions offered in the smaller ad; in fact, many are found illustrated in the large ad, but how much more interesting the Kiddie Kar becomes when imbued with animation. How much more euphonious is the phrase, "Bubble Books that Sing" than just plain "Books."

As far as beauty is concerned, the smaller ad is more attractive than the larger, but the latter is indeed a much more scientifically arranged piece of copy. The gift suggestions of this copy are much more forceful and the prices quoted on the toys makes it of tangible value and productive of Christmas business. While the suggestions made by the George Rome Company are classified and well arranged, the ad contains no good and definite reason why a person should buy Christmas gifts in that store in preference to some other store, which may be in an equally convenient location.

The two ads were full-page insertions in the local newspaper.

Contrasting Two Full-Page Newspaper Christmas Advertisements, in Order to Emphasize the Importance of Using Illustrations and Definite Price Quotations.

Business Sentiment Undergoes Marked Improvement; Period of Steady Trade Indicated.

Contributing Factors Are Mellon Tax Reduction, Buying Movements in Copper and Pig Iron—Tin and Copper Up.

BUSINESS sentiment has undergone marked improvement in the past month. There are two reasons for this. One is found in the failure of dark forebodings for 1923 to materialize. The other is found in the recent flood of favorable developments.

Most important of these have been the sweeping stock market advance, the wave of extra dividends, Secretary Mellon's tax reduction plan, the gain in building, the buying movement in copper and pig iron and prospects for large railroad equipment demand.

These events have freed business from the fear of a sharp trade reaction. All retarding factors have been removed, however. Europe is seething in uncertainty. Buyers' caution continues in most lines and production costs are high. No boom is indicated, but rather a period of steady trade.

Copper

Recently there has been a tendency among the professional members of the metal trade to take their cue to the foreign situation from the movement of sterling and the New York stock market and the improvement in both this week has helped sentiment considerably, both among buyers and sellers. Copper had a superficial reaction to 12.62½ cents, refinery, based on pressed offers of November specification copper. The major market, however, has not broken 13.00 cents delivered. No change was made in mill prices.

Tin

Tin has engaged in spectacular movements, attributed to the speculative activities of London bull operators, said to be headed by Richard. On November 26th the London tin price advanced over £8 while the New York price jumped 2 cents a pound from Friday to Monday. There has been no reasonable news on which to base the movement excepting speculation based on expectation of favorable November 30 statistics.

Our market has been in an inactive condition today and apart from 150 tons of future Straits which was sold at the afternoon call on the Metal Exchange at 47.25 cents, very little business was done. For prompt deliveries there have been no public offerings below 47.50 cents for Straits.

Zinc.

The demand for zinc is not active, but the price is well maintained. 6.35 cents East St. Louis basis has been bid and declined for December shipment Price Western, and the market is steady at 6.37½ cents, though some smelters are declining to meet the current price, and in no direction is there any anxiety shown to sell.

Domestic demand, though lately improved, is not particularly active at the moment. The principal feature of strength is the prospect of export which appears well founded. though the decline in sterling exchange today to around $4.36 was a slight set-back to the London parity.

Quotations East St. Louis are: December, 6.35 to 6.40 cents; January, 6.37½ to 6.42½ cents; February same as January.

Lead.

Consumption is proceeding in very good volume, cable interests being particularly busy, but the orders at present from consumers are not in proportion to the trading activity seen in the outside market between dealers. As high as 6.75 cents East St. Louis is reported paid by dealers for prompt soft Missouri.

Producers are supplying their regular trade at inside this price for December shipment, but are not able to offer prompt at all freely. The general character of the market is strong.

Quotations are: December, 6.70 to 6.75 cents; January and February same.

Solder.

Chicago warehouse prices on solder are as follows: Warranted, 50-50, $29.50; Commercial, 45-55, $28.75, and Plumbers', $27.50, all per 100 pounds.

Nails and Wire.

Buying of mixed carloads of wire products showed some life the past week and jobbers in various sections are beginning to buy. By the middle or end of next month this sort of buying will represent a heavy aggregate and jobbers everywhere will be placing orders to replenish stocks, in which they have been hampered by the wish to avoid large inventory. Several nail mills and wire plants in this locality have fair backlogs and are going ahead on a 70 per cent basis. Wire is unchanged at 2.75 cents and nails at 3.00 cents, base Pittsburgh.

Sheets.

Demand for sheets has continued to taper off, but at a very slow rate, and the present demand is all that could be expected for this time of year if current requirements only are being covered. A heavier demand could be expected only if buyers were endeavoring to build up stocks for the future.

As to production, the leading interest is operating a little better than ten days ago, and is above 85 per cent instead of below, in the number of turns worked out of the theoretical full number. Early this month independents were averaging

FOR many years a vast audience of millions of consumers has been reading ARMCO-Ingot Iron advertisements in more than twenty trade papers and the *Saturday Evening Post.*

Consider the advertisement below: It appeared recently in the *Post* More than 2,500,000 persons buy this publication and each copy is read by at least three different persons, making a possible audience of 7,500,000 persons for each Armco ad in the *Post* alone. And this has been going on for nine years.

Every hardware merchant or sheet metal contractor can profit by Armco's advertising. All he need do is feature the *blue* triangle, the trademark of ARMCO-Ingot Iron, which is so familiar to consumers.

Bungalow *or* Skyscraper

Whatever you are building, repairing, or equipping, know about commercially pure iron and you will save money

YOU have fire insurance on your building as a matter of common sense. How about rust insurance?

You may suffer from fire, but you are certainly going to lose money every year from rust—unless you use the kind of sheet metal that is especially made to stand exposure.

How serious a matter this is becomes apparent the moment you check up on the number of ways you use iron or steel in even a very modest house.

There are the flashing, gutters, down spouting, metal lath, furnace drum, hot-water tank; not to speak of home equipment, such as stove, refrigerator, ash cans, garbage pail, washing machine, and tub covers.

First, know the cause

Air and moisture attack the weak spots in metal, just as disease germs find a lodging in the weak parts of a person's body. When moisture reaches these things it starts electrolytic action similar to that which goes on in a storage battery. This causes the corrosion which destroys metal. Once this fact was learned, the next step was to find a way to make commercially pure iron.

Finding the answer

A score of years ago The American Rolling Mill Company went to work on the problem of making an iron that was practically free from impurities and producing this iron in commercial quantities.

Long research was followed by the development of new methods of manufacture that called for scrupulous and patient care in each process. Then came the erection of new mills and the acquiring of original sources of supply for raw material.

The result is ARMCO Ingot Iron, now world-famous. It contains less than one-sixth of one per cent of rust-promoting impurities and is recognized throughout the world as the pure iron of commerce.

No ferrous metal will absolutely prevent rust, but ARMCO Ingot Iron has proved that it will resist rust for years.

WHERE TO LOOK FOR ARMCO *Ingot Iron*

Here are some of the everyday uses of ARMCO Ingot Iron:

For the Home	In Industry	Farm Equipment
Stoves	Welding	Boiler Tubes and Pipes—Flumes
Washing Machines	Culverts	Cold Rolled Strip
Garbage Cans	Smoke Stacks	Cold Drawn Bars
Ash Cans—Pails	Oil & Water Tanks	**In Building**
Refrigerators	Acetylene Tanks	Coping—Roofing
Furnace Drums	Freight Car Roofs	Flashing—Siding
Hot Water Tanks	Coal Car Sidings	Eaves Trough
Table Tops	Drainage Systems	Down Spouting
Tub Covers	Car Heaters	Skylights
Electric Light Reflectors	Gasoline Tanks	Heating and Ventilating Systems
	Coal Tipples	Window Frames
	Wire Fencing	Metal Lath
	Metal Doors	
	Grave Vaults and Caskets	

OTHER ARMCO PRODUCTS

Armco chemists and metallurgists, working in one of the most complete laboratories of its kind in America, have developed not only Armco Ingot Iron, but also Armco steel sheet specialties for the automobile, electrical and other industries. Leading automobile manufacturers use Armco steel sheets on account of their exceptional bending and drawing qualities. Armco steel electrical sheets are widely used because of their high permeability, low core loss and non-aging qualities. The American Rolling Mill Company are makers of high-grade special sheets to meet the demands of exacting manufacturers. Technical information will be supplied to any manufacturer as to Armco products and their adaptability to any particular use.

The results of purity

The purity of ARMCO Ingot Iron that enables it to ward off corrosion gives it other attributes of exceptional value. It is soft, dense and even, with a velvety, uniform surface.

Large quantities of it are coated with zinc as a still further safeguard against exposure. If the sheet metal in your home is of zinc-coated ARMCO Ingot Iron you need have no fear of premature corrosion. Your sheet metal worker can tell you the gauge that will give the longest service on your building.

Thousands of housewives have learned that when ARMCO Ingot Iron is used as a base metal for enameled stoves, refrigerators, tub covers, etc., the enamel is perfectly smooth and stays so.

How you can tell it

Articles manufactured of ARMCO Ingot Iron bear the blue and gold Armco label. You can tell the metal in sheet form by the blue Armco triangle. Always look for the Armco trade mark; it is the sign of true economy.

THE AMERICAN ROLLING MILL COMPANY
Middletown, Ohio

ARMCO
TRADE MARK
INGOT IRON
Resists Rust

a trifle above 70 per cent while now they seem to have passed just below that figure. This would make operations by all sheet mills just under 75 per cent at the present time.

A fair guess is that the sheet industry as a whole has been operating the past few days at approximately 74 per cent of theoretical full, on the basis of turns worked, and that the operation outside of the Japanese business is approximately 68 per cent as 100 per cent in turns worked is practically unattainable, it may be said that production for the domestic trade is between 70 and 75 per cent of normal full.

In galvanized sheets the shading, when there is any, is usually $3.00 a ton, but the full price of 5.00 cents is being obtained on considerable tonnage. If the reports several weeks ago were true, that there was considerable selling at 4.75 cents, then the market is firmer now, for it is fairly quotable at 4.85 cents to 5.00 cents. However, those reports probably were not true. Blue annealed sheets are firm at 3.00 cents.

Tin Plate.

The tin plate market has grown quite sluggish. It gave a very favorable account of itself when the two largest consumers were making extensive arrangements with the leading interest for tin plate to July 1st.

This business, with a moderate amount of business from other customers and with the regular allowance for export sales assured the leading interest, several weeks ago, of an operation of fully 90 per cent to July 1st, while it was doubtful, in view of experiences this year, whether a 90 per cent operation could be averaged. There were also heavy deliveries for these two consumers for the balance of this year, as well as large deliveries to general line customers whose deliveries had been delayed.

The tin plate market is very firm at the $5.50 price. Even quantity differentials seem to be unusual. The so-called "re-export plate," which means plate sold to exporters who could import plate and get refund of the duty by way of drawback, bring close to the full domestic price. Recently a 100,000 box order went at $5.30, and that was considered somewhat of a concession to the buyer.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $16.00 to $16.50; old iron axles, $24.00 to $24.50; steel springs, $18.50 to $19.00; No. 1 wrought iron, $12.00 to $12.50; No. 1 cast, $17.00 to $17.50, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9½ cents; light brass, 6 cents; lead 4¾ cents; zinc, 4 cents, and cast aluminum, 15 cents.

Strength Manifested in Pig Iron Market; Some Price Advances Occurred.

Prompt Iron, Chicago, $23.50—Buying Movement Largest on Record—More Blast Furnaces Blown In at Birmingham.

PIG iron was quoted 50 cents a ton higher in the Chicago district and in some instances $1.00 a ton higher is asked. The average price asked is $23.50, Chicago, for prompt iron and $24.00 to $24.50, Chicago, for future shipment.

About 200,000 tons of iron was purchased in the Chicago district during the last two weeks. Several furnaces may go on soon, but no definite announcement has yet been made. Large inquiries are still in the market and much interest is being manifested. In many quarters it is stated that the present pig iron buying movement is the largest on record in the Chicago territory.

A leading sales agency in Chicago is quoting $23.50, Chicago, for prompt iron and $24.00 for iron for later shipment.

Pig iron buying has not ceased in the Birmingham territory, though the activity that has been noted during the past two weeks is not being maintained.

Indications now point to the necessity of blowing-in more blast furnaces.

The Alabama Company furnace being repaired will be ready for operation early in January. The company has blown-out a number of bee-hive coke ovens and is getting coke through the Semet-Solvay plant, furnishing the coal for the same.

The market report of Rogers, Brown & Company says:

"While a considerable quantity of pig iron was purchased during the past week, the most noteworthy features of the market were the strength manifested and the price advances that occurred. Several furnaces, by reason of the tonnage accepted, withdrew from the market.

"The higher price schedules issued by the furnaces did not tend to stop the buying movement. Sales continued in considerable volumes, but the aggregate was not so large as in the preceding week. Only a small portion of the tonnage purchased was for delivery after April 1. This was due to the refusal of most sellers to entertain deliveries beyond that date, although a large amount of iron could have been sold for second quarter delivery.

"It is not expected that foundry operations will materially improve within the next thirty days by reason of the inventory period, but it seems to be the consensus of opinion that better operation will start with the beginning of the new year.

"The buying of iron during the past two weeks is believed to have been conservative, and that very little was contracted for other than normal requirements; furthermore, that any increase in operating conditions will result in another buying movement for additional tonnage to be delivered in the first quarter and possibly lead to an active market for second quarter delivery.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry.. 23 00 to 23 50
Southern Fdy. No. 2 ..... 26 01 to 27 01
Lake Sup. Charcoal 28 04
Malleable ..... 23 00 to 23 50

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20 112 sheets	$12 45
IX	14x20	14 65
IXX	14x20 56 sheets	17 57
IXXX	14x20	19 12
IXXXX	14x20	19 65
IC	20x28 112 sheets	27 50
IX	20x28	29 85
IXX	20x28 56 sheets	16 15
IXXX	20x28	17 30
IXXXX	20x28	18 35

TERNE PLATES.

		Per Box
IC	20x28, 40-lb. 112 sheets	$25 60
IX	20x28, 40-lb. " "	28 50
IC	20x28, 30-lb. " "	21 30
IX	20x28, 30-lb. " "	24 70
IC	20x28, 25-lb. " "	20 30
IX	20x28, 25-lb. " "	23 70
IC	20x28, 20-lb. " "	18 30
IX	20x28, 20-lb. " "	21 15
IC	20x28, 15-lb. " "	17 05
IC	20x28, 12-lb. " "	15 75
IC	20x28, 8-lb. " "	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28..$13 85
Cokes, 90 lbs., base, 20x28.. 14 10
Cokes, 100 lbs. base, 20x28.. 14 45
Cokes, 107 lbs., base, IC 20x28 ..... 14 85
Cokes, 135 lbs. base, IX 20x28 ..... 17 40
Cokes, 155 lbs. base, 56 sheets 9 75
Cokes, 175 lbs. base, 56 sheets 10 65
Cokes, 195 lbs. base, 56 sheets 11 70

BLUE ANNEALED SHEETS.

Base .....per 100 lbs. $3 50

ONE PASS COLD ROLLED BLACK.

No. 18-20.....per 100 lbs. $4 50
No. 22-24.....per 100 lbs. 4 55
No. 26.....per 100 lbs. 4 60
No. 27.....per 100 lbs. 4 65
No. 28.....per 100 lbs. 4 70
No. 29.....per 100 lbs. 4 75

GALVANIZED.

No. 16.....per 100 lbs. $5 10
No. 18-20.....per 100 lbs. 5 25
No. 22-24.....per 100 lbs. 5 40
No. 26.....per 100 lbs. 5 55
No. 27.....per 100 lbs. 5 70
No. 28.....per 100 lbs. 5 85
No. 30.....per 100 lbs. 6 35

BAR SOLDER.

Warranted.
50-50 .....per 100 lbs. $29 50
Commercial.
45-55 .....per 100 lbs. 28 75
Plumbers .....per 100 lbs. 27 50

ZINC.

In Slabs 7 37½

SHEET ZINC.

Cask lots, stock, 100 lbs.. 11 00
Less than cask lots, 100 lbs. 11 50

BRASS.

Sheets, Chicago base 19¾c
Mill Base 17¾c
Tubing, brazed, base 25¾c
Wire, base 18¼c

COPPER.

Sheets, Chicago, base.....20¾c
Mill base 20c
Tubing, seamless, base.....24c
Wire, No. 9 & 10 B. & S. Ga. 17¾c
Wire, No. 11, B. & S. Ga....17¾c

LEAD.

American Pig 7 75
Bar 8 75
Sheet.
Full Coils....per 100 lbs. 10 75
Cut Coils.....per 100 lbs. 11 75

TIN.

Pig Tin .....per 100 lbs. 49½c
Bar Tin .....per 100 lbs. 50½c

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.
Barten's .....Net
White's .....Net

AMMUNITION.

Shells, Loaded, Peters.
Loaded with Black Powder 18%
Loaded with Smokeless Powder 18%
Winchester.
Smokeless Repeater Grade .....20 & 4%
Smokeless Leader Grade .....20 & 4%
Black Powder .....20 & 4%
U. M. C.
Nitre Club .....20 & 4%
Arrow .....20 & 4%
New Club .....20 & 4%
Gun Wads—per 1000.
Winchester 7- 8 gauge 10&7½%
" 9-10 gauge 10&7½%
" 11-28 gauge 10&7½%

ASBESTOS.

Paper up to 1/16.....6c per lb.
Millboard .....6¼c per lb.
Millboard 2/32 to ⅛....6c per lb.
Corrugated Paper (250 sq. ft. to roll)....$6.00 per roll

AUGERS.

Boring Machine.....40&10%
Carpenter's Nut 50%
Hollow.
Stearns, No. 4, doz.....$11 50
Post Hole.
Iwan's Post Hole and Well 25%
Vaughan's, 4 to 9 in.....$15 60

AXES.

First Quality, Single Bitted (unhandled, 3 to 4 lb., per doz.....$14 00
Good Quality, Single Bitted, same weight, per doz. 12 00

BARS, CROW.

Steel, 4 ft., 10 lb.....$ 80
Steel, 5 ft., 12 lb..... 1 40
Pinch bars.
5¼ ft., 24 lb..... 1 60

BARS, WRECKING.

V. & B. No. 12.....$0 34
V. & B. No. 24..... 0 43
V. & B. No. 324..... 0 57
V. & B. No. 30..... 0 43
V. & B. No. 330..... 0 63

BITS.

All Vaughan and Bushnell.
Screw Driver, No. 30, each $ 27
Screw Driver, No. 1, each 16
Reamer, No. 80, each... 41
Reamer, No. 100 each... 41
Countersink, No. 13, each.. 20
Countersink, Nos. 14-15 each 27

BLADES, SAW.

Wood.
Atkins 30-in.
Nos. 6 40 26
$3 90 $9 45 $5 40

BLOCKS.

Wooden 45%
Patent 45%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per Doz.
Crystal, 22"	$2 90
Wash.	
No. 760, Banner Globe (single) .....per doz.	$5 25
No. 852, Banner Globe (single) .....per doz.	6 75
No. 801, Brass King, ...per doz.	3 25
No. 866, Single—Plain Pump	6 25

BOLTS.

Carriage, Machine, etc.
Carriage, cut thread, ⅝x6 and sizes smaller and shorter 40-10-5%
Carriage sizes, larger and smaller and shorter...40-10-5%
Machine, ⅝x4 and sizes smaller and shorter.....50-5%
Machine, sizes larger and longer than ⅝x4.....50-5%
Stove 70-10%

BRACES, RATCHET.

V. & B. No. 444 8 in.....$4 54
V. & B. No. 222 8 in..... 3 89
V. & B. No. 111 8 in..... 3 55
V. & B. No. 11 8 in..... 3 02

BRUSHES.

Hot Air Pipe Cleaning.
Bristle, with handle, each $0 85
Flue Cleaning.
Steel Only, each.....$1 25

BURRS.

Copper Burrs only.....40%

BUTTS.

Steel, antique copper or dull brass finish—case lots—3½x3½—per dozen pairs $3 43
4x4 ..... " " 4 74
Heavy Bevel steel inside sets, case lots—.....per dozen sets $ 60
Steel bit keyed front door sets, each 3 00
Wrought brass bit keyed front door sets, each.... 4 00
Cylinder front door sets, each 3 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net $ 45
" " 10 lb. cans, " 90
" " 25 lb. cans, " 2 00
Asbestos, 5 lb. cans " 45
Pecora.....per 100 lbs. 7 51

CHAINS.

Sher. Steel Safety Chain.
500-ft. coil, per ft..... .02
100 to 500 ft., per ft..... .02½
Less than 100 ft., per ft .03
Iron Jack Chain.
Box (12 yds.)..... .45

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent. 30%
Iwan's Iron Mountain only..35%
Standard .....30 to 40%

CHISELS.

Cold.
V. & B. No. 25, ¼ in., each $0 26
V. & B. No. 25, ⅜ in., each 41
Diamond Point.
V. & B. No. 55, ¼ in..... 0 31
V. & B. No. 55, ½ in..... 0 48
Firmer Bevelled
Round Nose.
V. & B. No. 65, ¼ in..... 0 29
V. & B. No. 65, ½ in..... 0 40
Socket Firmer.
Cape.
V. & B. No. 50, ⅜ in..... 0 31
V. & B. No. 50, ¾ in..... 0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers .....List less 35-40%
Yankee, for Yankee Screw Drivers $6 00

CLAMPS.

Adjustable.
No. 100, Door (Stearns) doz. $22 00
Carpenters'.
Steel Bar..List price plus 20%
Hose.
Sherman's brass, ¾-inch per doz. $0 48
Double, brass, ¾-inch, per doz. 1 20

CLINKER TONGS

Front Rank, each.....$1 75
Per doz. 1 85

CLIPS.

Damper.
Acme, with tail pieces, per doz. $1 2
Non Rivet tail pieces, per doz. 3

COPPERS—Soldering. Pointed Roofing.

3 lb. and heavier....per lb. 40
2½ lb..... " 46
2 lb..... " 48
1½ lb..... " 55
1 lb..... " 60

CORD.

No. 7 Std. per doz. banks..$10 2
No. 8 " " " " 12 0

CORNICE BRAKES.

Chicago Steel Bending.
Nos. 1 to 6 B.....10%

COUPLINGS, HOSE.

Brass.....per doz. $2 2

CUT-OFFS

Kuehn's Korrekt Kutoffs:
Galv., plain, round or cor. 20
Standard gauge 40%
26 gauge 10%

DAMPERS.

"Yankee" Hot Air.
7 inch, each 20c, doz.....$1 7
8 " " 25c, " 2 4
9 " " 30c, " 2 7
10 " " 32c, " 3 0
Smoke Pipe.
7 inch, each.....$ 3
8 " " 4
9 " " 5
10 " " 6
12 " " 9
Reversible Check.
8 inch, each.....$1 5
9 " " 1 7

DIGGERS.

Post Hole.
Iwan's Split Handle (Eureka)
4-ft. Handle...per doz. $14 0
7-ft. Handle...per doz. 26 0
Iwan's Hercules pattern, per doz. 14 0

DRILLS.

V. & B. Star, 12-inch Length.
¼, 5/16 and ⅜, each....$ 2
⅜, each 3
½, each 4
1¼, each 6
V. & B. Star, 18-inch Length.
5/16 and ⅜, each.....$ 3
⅜, each 4
½, each 6
1¼, each 1 0

EAVES TROUGH.

Milcor .....
Galv. Crimpedge, crated...75%

ELBOWS—Conductor Pipe.

Milcor .....
Galv., plain or corrugated, round flat
Crimp, Std. gauge.....65%
26 Gauge 40%
24 Gauge 10%
Square Corrugated.
Milcor .....
Standard gauge 45%
26 gauge 30%
Portico Elbows.
Standard Gauge Conductor Pipe plain or corrugated.
Not nested .....70 & 5%
Nested solid .....70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.

	Doz.
5-inch .....*	$1 4
6-inch	1 6
7-inch	2 1

Special Corrugated.

	Doz.
6-inch	$1 4
7-inch	1 7

Uniforms, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60½
Lawn "	53%

FILES AND RASPS.

Heller's (American)	65-5%
American	65-5%
Arcade	60 & 10%
Black Diamond	50-5%
Eagle	60-10%
Great Western	60 & 10%
Kearney & Foot	60 & 10%
McClellan	60 & 10%
Nicholson	50-14%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.
Complete line Firepots and Torches...52%

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.	$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brasier, Kerosene or Gasolene, 10 gals.	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.	7 92
No. 53 Torch, Gasolene, 1 quart	5 40
No. 36 Torch, Gasolene, 1 pt.	4 05

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line. 48%

Geo. W. Diener Mfg. Co.	**Ea.**
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt.	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.
Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.
Vesuvius, F.O.B. St. Louis 30% (Extra Discf. for large quantities)

Chas. A. Hones, Inc.	
Buzzer No. 1	$ 9 00
" " 2	12 00
" " 22	13 50
" " 42	15 00
" " 43	19 00

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
½ quart	$3 50
1 quart	4 90
2 quart	5 70

GALVANIZED WARE.

Pails (Competition), 8 qt.	$1 89
10-qt.	2 15
12-qt.	2 35
14-qt.	2 65
Wash tubs, No. 1	$6 10
No. 2	6 80
No. 3	7 90

GARAGE DOOR HARDWARE.
Stanley ..... All net

GAUGES.
Marking, Mortise, etc. ..... Nets

Wire.
Disston's 25%

GIMLETS.
Discount ..... 65% and 10%

GLASS.
Single Strength, A and B, all sizes ..... 83 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'

1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	12 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED.

All V. and B.	Each, net
Blacksmiths' Hand, No. 0, 36-oz.	$1 00
Engineers' No. 1, 26-oz.	1 00
Farrier's, No. 7, 7-oz.	93
Machinists', No. 1, 7-oz.	78
Nail.	
Vanadium, No. 41, 20-oz. each	1 59
Vanadium, No. 41½, 16-oz., each	1 59
V. & B., No. 11½, 16-oz. each	1 01
Garden City, No. 111½, 16-oz., each	75
Tinner's Riveting, No. 1, 8-oz., each	79
Shoe, Steel, No. 1, 18-oz., each	65
Tack.	
Magnetic. No. 5, 4-oz., each	81

HAMMERS, HEAVY.
Farrier's, No. 10, 10-oz. ... $1 01

HANDLES.

Axe.	
Hickory, No. 1 ... per doz.	4 00
Hickory, No. 2 ... "	3 00
1st quality, second growth	6 00
Special white, 2nd growth	5 00
Chisel.	
Hickory, Tanged, Firmer Assorted ... per doz.	55c
Hickory, Socket, Firmer, Assorted ... per doz.	70c
File ... per doz.	$1 20
Hammer and Hatchet.	
No. 1 per doz.	$3 90
Second growth hickory, per doz.	1 50
Soldering.	
Per doz.	$2 40

HANGERS.

Conductor Pipe.	
Milcor Perfection Wire ...	25%
Eaves Trough.	
Steel hangers	30%
Triple Twist wire	10%
Milcor Eclipse Wire	20%
Milcor Triplex Wire	15%
Milcor Milwaukee Extension	15%
Milcor Steel (galv. after forming) List plus	12½ %
Milcor Selflock E. T. Wire, List plus	40%

HASPS.
Hinge, Wrought, with staples, Net

HATCHETS.

V. and B. Supersteel.	Each
Bread, No. 1, 24-oz.	$1 42
Half, No. 1, 15-oz.	1 25
Half, No. 3, 27-oz.	1 27
Claw, No. 1, 19-oz.	1 31
Flooring, No. 1, 20-oz.	1 43
Shingling, No. 1, 17-oz.	1 20
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25
Vanadium Steel.	
Half, No. 62, 22-oz.	$1 82
Underhill Pattern Lathing, 9 row, 19-oz.	2 29

HINGES.

Heavy Strap, in Bundles.	
4 inch, dozen prs.	$1 12
5 " " "	1 67
6 " " "	1 92
8 " " "	3 21
Extra Heavy T in Bundles.	
4 inch, dozen prs.	$1 74
5 " " "	1 85
6 " " "	2 31
8 " " "	3 9[illegible]

HOES.
Garden ..... Net

HOOKS.

Box.	
V. and B. No. 9, each	$0 26
Conductor.	
Milcor "Direct Drive" Wrought Iron for wood or brick	15%
Cotton.	
V. and B. No. 8, each	24
Hay.	
V. and B. No. 1, each	26

Bar Meat.	
V. and B. No. 26, ⅝", each	09
V. and B. No. 28, ½", each	16
Screw Meat.	
V. and B. No. 2, per gro.	6 50
Butchers' "S."	
V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

	Per. Ft.
¾-in. 2 ply molded	9½c to 12¾c
¾-in. cord	8½c to 10c
¾-in. wrapped	13½c

HUMIDIFIERS.

"Front-Rank," Automatic.	
In single lots	50%
In lots of 10 or more	50-5%
In lots of 25 or more	50-10%
Vapor pans, etc., each	50%

IRONS.

Sad.	
Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30
E. C. Stearns'.	
No. OA Corner, doz. sets	$2 50
No. OB " " "	2 75

KNIVES.

Butcher.	
Beechwood Handles, 6-inch blade	25%
Beechwood Handles, 7-inch blade	25%
Beechwood Handles, 8-inch blade	25%
Cooper's Hoop	25%
Drawing.	
Standard	25%
Adjustable	25%
Barton's Carpenters'	25%
Hay.	
Iwan's Solid Socket	25%
Heath's	25%
Iwan's Sickle Edge	25%
Iwan's Imp'd Serrated	25%
Hedge.	
Challenge	25%
Disston's No. 1	25%
Putty.	
Common	25%
Lander's	25%
Scraping.	
Beech Handles	25%
Lander's	25%

KNOBS.

Door.	
Mineral ... per doz.	$2 00
Porcelain ... "	2 00
Jet ... "	2 00

LADDERS.

Step.	
Common, per ft.	28c
Common, with Shelf, add 10c	
IXL	34c
Challenge, 6 to 9 ft.	58c
10 to 16 ft.	60c
Kant-Break, per lineal ft.	75c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2, cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85
Ball Bearing.	
4 blade, adjustable bearing.	
14"	$7 50
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.	
Extra heavy, 18-oz.	25%
Heavy, 16-oz.	40%
Medium, 14½-oz.	40%
Light, 12-oz.	50%

LEATHER LACING.
Cut, strictly No. 1 ..... 45%

LEVELS.

Disston, No. 28 Asst.	$32 00
" No. 18, 20 in., each	1 32
" No. 22, 24 in., each	2 40
" Sharting, 6 in.	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.	6 75
" No. 2 Asst.	12 40
" 24-26 in., each	1 92
" 28-30 in., each	1 00

LIFTERS.

Stove Cover.	
Coppered ... per gro.	$4 00
Alaska ... "	4 75

LOCKS.

Barn Door.	
No. 60 Stearn's ... per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'.	
Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory ... per doz.	$3 00— 5 00
Tinners'.	
Hickory ... per doz.	$2 25

MATS.

Door.	
National Rigid	5 & 10 & 5%
Acme Steel Flexible	50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets	20%
Milcor	
Galv. one piece stamped	40%

MOPS.

Cotton, Star (Cut Ends).				
Pounds	12'	15'	18'	24'-3-os.
Per doz.	$4 00	4 25	5 50	7 00
Enterprise				16⅔%
Parker				50 & 5%

NAILS.

Cut Steel	$4 70
Cut Iron	4 70
Wire.	
Common	3 80
Cement Coated	3 40

NETTING, POULTRY.

Galvanized before weaving	45-10%
Galvanized after weaving	45%

NIPPERS.

Nail Cutting.	
V. & B. No. 30	75c
Double Duty.	
V. & B. No. 60	75c
Hoof.	
Heller's	40 & 10%
V. & B. No. 52, each	$2 25

NOZZLES.

Hose.	
Magic ... per doz.	$9 50
Diamond ... "	5 75

OILERS.

Chase Pattern.	
Brass and Copper	10%
Zinc Plated	40 & 5%
Railroad.	
Brass	20 & 5%
Coppered	50 & 5%
Steel.	
Copper Plated	70 & 5%

OPENERS.

Delmonico ... per doz.	$1 [illegible]
Never Slip ... "	[illegible]
Crate.	
V. & B. ... per doz.	$7 25—11 00

PAILS.

Cream.
14-qt. without gauge, ... per doz. $9 50
12-qt. without gauge, ... per doz. 11 00
10-qt. without gauge, ... per doz. 11 75

Sap.
10-qt., IC Tin....per doz. $4 00
12- " " " " 5 50

Stock.

Galv. qts.	14	16	18	20
Per doz.	$9 75	10 75	13 75	14 50

Water.

Galvanized qts.	10	12	14
Per doz.	$5 75	6 50	7 25

PASTE

Asbestos Dry Paste:
200-lb. barrel $15 00
100-lb. barrel 8 00
25-lb. pail 2 25
10-lb. bag 1 00
5-lb. bag 55
2½-lb. cartons 30

PINCERS.

All V. & B.

Carpenters', cast steel, No.	6	8	10	12
Each	$0 43	$0 52	$0 61	$0 71

Blacksmiths', No. 10.....$0 64

PIPE.

Conductor.
"Interlock" Galvanized.
Crated and nested (all gauges) 60-20%
Crated and not nested (all gauges) 60-15%
Square Corrugated A and B and Octagon.
29 Gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%

"Interlock."
Crated and nested (all gauges) 60-20%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.

Sleeve.	Per 100 joints.
26 gauge, 5 inch E. C. nested	$17 00
26 gauge, 6 inch E. C. nested	18 00
26 gauge, 7 inch E. C. nested	19 00
28 gauge, 5 inch E. C. nested	15 00
28 gauge, 6 inch E. C. nested	16 00
28 gauge, 7 inch E. C. nested	18 00
30 gauge, 5 inch E. C. nested	13 00
30 gauge, 6 inch E. C. nested	14 00
30 gauge, 7 inch E. C. nested	16 00
T-Joint Made up, 6-inch..... per 100	$40 00

Furnace Pipe.
Double Wall Pipe and Fittings 33⅓%
Single Wall Pipe, Round Pipe Fittings 33⅓%
Galvanized and Black Iron Pipe, Shoes, etc...33⅓%
Milcor Galvanized 40%

PLANES.

Stanley Iron Bench.....Net

PLIERS.

(V. & B.)

Nut, No. 2, each.....	$2 60
" No. 5, each.....	64
" No. 25, each.....	69
Gas, No. 7, each.....	55
" No. 8, each.....	61
" No. 12, each.....	87
Lining or Crimping.	
No. 25, each.....	64
Button's Pattern.	
No. 6 each.....	61
No. 8 each.....	74
Double Duty, No. 196.....	59

POINTS, GLAZIERS'

No. 1, 2 and 3..per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent, ... per doz.	$0 75
Nickel Plated, coil handles ..... "	1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Furnace Tackle.....per doz.	$0 60
Per gross	6 00
" Screw (encased) ...per doz.	$0 85

Ventilating Register.

Per gross $9 00	
Small, per pair.....	0 30
Large, per pair.....	0 50

PUNCHES.

Machine.	Each.
V. & B., No. 11-13, 1½x6..$0 19	
V. & B., No. 90, ⅝x9.....	27
V. & B., No. 10, ⅝x10....	29
V. & B., No. 1-6, ½x6....	12

Center.
V. & B., No. 50, ⅝x4.....$0 14

Belt.

V. & B., No. 101-103.....$0 24	
V. & B., No. 103-109.....	32
V. & B., No. 25, ass't.....	3 20

Samson Line.
No. 1 Hand { Doz. lots or less 40%
No. 2 Hand { 3 doz. lots ...Less 40 & 5%
No. 4 Hand { 6 doz. lots or more...Less 50%
No. 3 Bench { Less than doz. lots...Less 25%; Doz. lots or more...Less 40%

Extra Punches and Dies for Samson:
No. 1 Hand { Less than doz. lots....Less 25%
No. 2 Hand { Doz. lots, ...Less 33⅓%
No. 4 Hand { 3 doz. lots, ...Less 40%
No. 3 Bench { 6 doz. lots or more, ..Less 40 & 10%

PUTTY.

Commercial Putty, 100-lb. kits $2 55

QUADRANTS.

Malleable Iron Damper.....10%

FLOOR REGISTERS AND BORDERS.

Cast Iron 20%
Steel and Semi-Steel.....33⅓%
Baseboard 33⅓%
Adjustable Ceiling Ventilators 33⅓%

Register Faces—Cast and Steel
Japanned, Bronzed and Plated, 4x6 to 14x14.....33⅓%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

ROOFING.

	Per Square
Best grade, slate surf. prep'd	$1 85
Best talc surfaced.....	2 20
Medium talc surfaced.....	1 50
Light talc surfaced.....	95
Red Rosin Sheeting, per ton	$72 00

ROPE.

Cotton.
Sisal.
1st Quality, base.....13½c
No. 2 .....12½c
Manila.
1st Quality standard brands 15½c
No. 2 .....14½c
Hardware Grade, per lb.....12½c

SAWS.

Butchers'.

Atkins	No. 2, 14-in.....	$12 75
"	No. 2, 18-in.....	14 20
"	No. 7, 16-in.....	15 85
"	No. 2, 22-in.....	15 92
"	No. 7, 20-in.....	18 95
"	No. 7, 24-in.....	20 20
"	No. 7, 28-in.....	22 35

Compass.

Atkins	No. 2, 10-in.....$	5 45
"	No. 10, 10-in.....	5 60
"	Blades, No. 2, 10-in.	3 25
"	" No. 2, 10-in.	3 36

Cross-Cut.

Atkins	No. 221, 4 ft.....$	3 82
"	No. 221, 6-ft.....	4 45
"	No. 221, 8-ft.....	6 07

Hand.

Copper Burrs only.....30%	
" No. 96, 20-in.....	21 70

Hand and Rip.

Atkins	No. 54, 20-in.....$	19 50
"	No. 54, 26-in.....	24 40
"	No. 53, 16-in.....	18 10
"	No. 53, 20-in.....	22 90
"	No. 53, 24-in.....	26 60
"	No. 53, 28-in.....	31 45
"	No. 53, 30-in.....	34 15

Keyhole.

Atkins No. 1, complete..	$3 10
" No. 2, complete..	3 70

Miter Box.

Atkins	No. 1, 4x20.....$	32 65
"	No. 1, 5x22.....	38 90
"	No. 1, 6x22.....	42 20

Pruning.

Atkins	No. 20, 12-in....$	8 45
"	No. 10, 16-in....	12 15

Wood.

Atkins	No. 202.....$	7 19
"	No. 218.....	8 75
"	No. 906.....	15 50
"	No. 1509.....	16 56

SCRAPERS.

Box.
No. 6, six blades each.... 25c
Hog.
No. 6, each..... 25c
Floor (Stearns).
No. 10, each.....$11 50

SCREEN DOOR HINGES.

Cast Iron .....gross $13 00
Steel ..... " 9 50

SCREWS.

Wood.
F. H. Bright 30%
R. H. Blued 75%
F. H. Jap'd 74%
F. H. Brass 76%
R. H. Brass 74%

Sheet Metal.

No. 7, ⅛x ¼, per gross.	$0 55
No. 10, ⅜x3/16, per gross.	75
No. 14, ⅜x ¼, per gross.	90

SCREW DRIVERS.

Uncle Sam Standard Head.

3 inches, each.....$	45
5 inches, each.....	52
8 inches, each.....	68
12 inches, each.....	1 02

Uncle Sam Insulated Head.

3 inches, each.....$	49
5 inches, each.....	57
8 inches, each.....	76
12 inches, each.....	1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes .....doz. $1 55
No. 100, in wooden boxes, ... doz. 1 58
No. 20, assorted.....doz. 39
No. 5, in cardboard boxes, ... doz. 1 25
No. 5, in wooden boxes, ... doz. 1 30

Rivet.
V. & B.

Farmers' .....$	0 19
Tinners' 3-4	0 40
" 00-0.....	0 60

Saw.

Atkins No. 10....per doz.	$3 30
" No. 12.... "	6 30

SHEARS.

	Per Doz
Nickel Plated, Straight, 6"	$12 90
" " " 7"	14 80
" " " 8"	16 80
Japanned, Straight ....6"	11 00
" " ....7"	12 40
" " ....8"	13 80

SHEARS, TINNERS' & MACHINISTS'.

Viking $32 00

Lennox Throatless.
No. 18 .....35%
Shear blades.....10%
(f.o.b. Marshalltown, Iowa.)

Peerless Steel Squaring.
Foot Power.
No. 1—30", 18 ga. cap.....15%
No. 2—36", 18 ga. cap.....15%
No. 4—52", 18 ga. cap.....15%
No. 10—120", 22 ga. cap...15%
No. 4A—52", 16 ga. cap....15%

Cast Iron Foot Power.
No. 01, 30", 18 ga. cap....15%

Power Driven.
(No. 100 Series, 2 Shaft Drive.)
No. 142—42", 18 ga. cap....15%
(No. 200 Series, 2 Shaft Underneath Drive.)
No. 242—42", 14 ga. cap...15%
(No. 300 Series, 2 Shaft Underneath Drive.)
No. 342—42", 10 ga. cap....15%
No. 372—72", 10 ga. cap....15%
(No. 500 Series, 3 Shaft Underneath Drive.
No. 596—96", 10 ga. cap...15%
(No. 600 Series, 3 Shaft Underneath Drive.)
No. 6120—120", 3/16" cap..10%

SHINGLES.

	Per Square
Zinc (Illinois)	$19 00

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp...65%
26 gauge round flat crimp..40%
24 gauge round flat crimp..10%
Conductor 65%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 25	15 60	14 85	14 10
3	16 75	16 00	16 25	14 45
4	17 10	16 25	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle .....per doz. $3 50
Long Handle ..... " 3 00

SIFTERS.

Genuine Hunters, doz.....$2 50

SKATES.

Ice, Men's and Boys'.	Per Pair
Key Clamp—rocker—bright finish .....$	75
Key Clamp—rocker—nickel finish	1 10
Key Clamp—rocker — pol. steel	1 25
Key Clamp—Hockey	1 35
Skate outfits	4 75
Women's and Girls'.	
½ Key Clamp—rocker....$	1 25
" " " hockey ..	1 35
Ice Skate outfit	5 00
Roller.	
Ball Bearing—Boys' .....$	1 55
Ball Bearing—Girls'	1 65

SNIPS, TINNERS'.

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SQUARES.

Steel and Iron.....Net
(Add for bluing, $3.00 per doz. net)
Mitre ..... "
Try ..... "
Try and Bevel..... "
Try and Mitre..... "
Fox's .....per doz. $6.00
Winterbottom's 10%

STAPLES.

Blind.
Barbed .....per lb. 21c@22c
Butter, Tub ..... " 16@19c
Fence—
Polished .....per 100 lbs. $5 45
Galvanized ..... " 6 15
Netting.
Galvanized ...per 100 lbs. $6 54
Wrought.
Wrought Staples, Hasps and Staples, Hasps, Hooks and Staples, and Hooks and Staples .....50&10%
Extra heavy 35%

STONES.

Axe.
Hindustan ....per lb. New Nets
More Grite .... " "
Washita ..... " "
Emery.
No. 126.....per doz. New Nets
Oil Mounted.
Arkansas Hard
No. 7.....per doz. New Nets
Arkansas Soft. " "
Washita No. 717 " "
Oil—Unmounted.
Arkansas Hard per lb. New Nets
Arkansas Soft. " "
Lily White.... " "
Queer Creek... " "
Washita ..... " "
Scythe.
Black Diamond per gro. New Nets
Crescent ..... " "
Green Mountain " "
LaMolle ..... " "
Extra Quinine bog ..... " "
Red End ..... " "

STOPS, BENCH.

No. 10 Morrill pattern .....per doz. $11 00
No. 11 Stearns pattern ..... " 10 00
No. 15 Smith pattern ..... " 7 00

STOPPERS, FLUE

Common .....per doz. $1 10
Gem, No. 1..... " 1 10
Gem, flat, No. 3.... " 1 00

STRETCHERS.

Carpet.
Bullard's .....per doz. $3 90
Excelsior ..... " 5 25
Malleable Iron .. " 70
Perfection ..... " 6 30
King ..... " 4 50
Wire.
O. S. Elwood, No. 1 per doz. Nets
O. S. Elwood, No. 2 " "

SWIVELS

Malleable Iron .....per lb. $0 10
Wrought Steel .....per gro. 4 50

TACKS.

Bill Posters' 6-oz. 25-lb. boxes per lb 15c
Upholsterers' 6-oz., 25-lb. boxes, per lb.....15½c

TAPES, MEASURING.

Asses' Skin .....List & 40%

THERMOMETERS.

Tin Case....per doz. 80c & $ 1 25
Wood Backs " 2 00 & 12 00
Glass ..... " 12 00

TIES.

Bale.
Single Loop, carload lots .....75 & 7%
Single Loop, less than car lots .....70 & 15%

TRAPS.

Mouse and Rat.	Per Gross
Sure Catch Mouse Traps.	$ 2 10
Vim Mouse Traps.....	2 10
Short Stop Mouse Traps.	1 80
Wood Choker Mouse Traps, 4 hole.....	10 25
	Per Doz.
Sure Catch Rat Traps....	$0 90
Dead Easy Rat Traps....	1 00

Packed in One Bushel Band Stave Baskets.

	List per Bushel
Sure Catch Mouse Traps (360 Traps)	$ 5 25
Short Stop Mouse Traps (360 Traps)	4 50
Sure Catch Rat Traps (54 Traps)	3 60
Short Stop Rat Traps (54 Traps)	3 15

Assorted Mouse and Rat Traps.

	List per Bushel.
Sure Catch (216 Mouse Traps and 26 Rat Traps)	$4 90
Short Stop (216 Mouse Traps and 26 Rat Traps)	4 25

TROWELS.

Cement.
Atkins No. 6.....$19 50
" No. 9..... 25 50

TWINE.

White Cotton.
Eureka, 4-ply .....per lb. 30c
Jute.
3-ply and 6-ply Bale Lots 22½c

VALLEY.

Milcor .....
Galv. formed or roll.....60%

VENTILATORS.

Standard .....30 to 40%

VISES.

No. 700 Hand, Inches	4½	5	5½
Doz. $11 15	13 00	14 85	
No. 701. In.	4	5	6
Doz. $11 15	13 00	16 70	

No. 1, Genuine Wentworth, Noiseless Saw....per doz. 9 25
No. 3, Genuine Wentworth, Noiseless Saw...per doz. 12 75
No. 500, All Steel Folding Saw .....per doz. 16 00

WASHERS.

Over ¼ in. barrel lots per 100 lbs.....$6 25
Iron and Steel.

In.	5/16	⅜	½	⅝	¾
	10¼c	9¼c	7¾c	7½	7 2/5c

WEATHER STRIPS.

Metallic Stitched.
½ in., per 100 ft.....$1 80
¾ in., per 100 ft..... 2 20
Wood and Felt.
⅝ in., per 100 ft.....$1 56
⅞ in., per 100 ft..... 1 56

WEIGHTS.

Hitching .....per lb. Nets
Sash—f. o. b. Chicago
Smaller lots, per ton....$47 50

WHEEL BARROWS.

Common Wood Tray.....$3 75
Steel Tray, Competition.... 4 50
Steel leg, garden..... 6 00

WIRE.

Plain annealed wire, No. 8 per 100 lbs. $3 70
Galvanized barb wire, per 100 lbs. 4 10
Wire cloth — Black painted, 12-mesh, per 100 sq. ft.. 2 35
Cattle Wire—galvanized catch weight spool, per 100 lbs. 4 60
Galvanized Hog Wire, 80 rod spool, per spool..... 3 98
Galvanized plain wire, No. 9, per 100 lbs..... 4 15
Stove Pipe, per stone..... 1 10

WOOD FACES.

50% off list.

WRENCHES.

Coes Steel Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%
Coes Knife-Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%

Coes All Patterns.....40-10%

WRINGERS.

No. 790, Guarantee per doz.		$49 50
No. 770, Bicycle	"	47 00
No. 670, Domestic	"	43 50
No. 110, Brighton	"	39 00
No. 750, Guarantee	"	51 00
No. 740, Bicycle	"	48 50
No. 22, Pioneer	"	35 50
No. 2, Superb	"	35 50

ADVERTISERS' INDEX

The dash (—) indicates that the advertisement does not appear in this issue.